THE INDUSTRIALIST

Vol. 33 No. 19

Issued Weekly By

Kansas State Agricultural College

Manhattan, Kansas

Published by

PRINTING DEPARTMENT

J. D. Rickman, Supt.

Entered at post-office, Manhattan, Kan., as second-class matter. Act of July 16, 1894.

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THE INDUSTRIALIST.

VOL. 33. MANHATTAN, KAN., MARCH 9, 1907. No. 19

The Oat Question.

The farmers of Kansas are deeply interested in the problem of growing more oats as well as corn, and the following questions were to-day propounded to Professor TenEyck, of the Kansas State Agricultural College, and we give here the replies as he dictated them:

Question.—What varieties of oats do you recommend, early- or late-maturing varieties?

Answer.—Early-maturing varieties of oats succeed best in this State. Oats should mature before the hot summer weather begins, or else the crop is apt to be blighted, and late-maturing oats will be likely to produce a heavy growth of straw, but with light grain.

During the past four years some thirty or forty varieties have been grown in comparative trials at the Kansas Experiment Station, including all of the varieties commonly grown in this State and adjoining states, and also several varieties recently introduced from Russia and other foreign countries. Three varieties have yielded so much better on the average than any of the others that I usually name them as the ones best adapted for growing in this State. These are Sixty-day, Kherson, and Red Texas, the average yield of each for the last four years having been 43.24, 42.11, and 40.44 bushels per acre, respectively. A number of varieties of oats which are standard in Iowa and Nebraska have been grown each year in comparison with these varieties, and the best producing of these was the Silvermine, which yielded 37.81 bushels per acre as an average for the four years.

Promising varieties which have been tested for less than four years are the Danish, Swedish Select, and Sparrowbill, all being varieties introduced from foreign countries, seed having been secured from the United States Department of Agriculture. The Stavaropol oats, seed of which was secured from Stavaropol, Russia, by the Kansas Experiment Station in 1905, is also a promising variety. As an average for the last two years the best-producing varieties rank as follows: Red Texas, 54.32; Danish, 48.72; Kher-

son, 47.27; Sixty-day, 45.75; Swedish Select, 45.15; Stavaropol, 43.16; and Sparrowbill, 42.18. This period included one good oat year, 1905, and one low-yield year, 1906. In both seasons these Red Texas oats ranked first. All of these varieties are early or medium early in maturing. The Sixty-day and Kherson oats have required, on the average, about ninety-two days to mature, while the Red Texas and the other varieties required from ninety-five to ninety-eight days to mature.

The Agronomy Department of the Experiment Station has been growing several of these varieties for seed production, and now has for sale some two hundred bushels of the Sixty-day oats, the variety which has given the highest average yield for the four seasons.

Q.—How much oats should be sown to the acre?

A.—Two bushels of oats per acre is a sufficient amount to sow, and if the seed is well cleaned, six to seven pecks will be enough to sow on fertile land in a well-prepared seed-bed. When oats are not well cleaned, but contain chaff and light grain, it is necessary to set the drill to sow a larger amount per acre than is required when the oats are well cleaned.

Q.—Why do we not get seventy-five bushels per acre, as we did years ago?

A.—Other conditions being equal, the yield of oats depends almost entirely upon the season, and this is true of other grains also, but perhaps not to the same degree. We have harvested from sixty to seventy bushels of oats per acre two years out of the last four, from land which was not especially fertile. I believe it is possible to raise as large crops of oats as we did years ago, provided good seed is sown in a well-prepared seed-bed on fertile soil, choosing varieties which have been tested and have proved to be adapted for growing in our soil and climate. In order that oats may not deteriorate it is necessary to grade the seed very carefully and sow only the heaviest grain from year to year. It is a general experience that oats seem to "run out" and farmers find it necessary to secure new seed every few years. The reason why oats "run out" in Kansas is primarily because we do not have a soil and climate particularly well adapted for growing oats. Some years are favorable, but other seasons are unfavorable and the oats make a light crop. If the light seed is sown and this practice is continued the oats will soon deteriorate and become unproductive. It then becomes necessary to secure new seed-oats from regions which are better adapted for growing oats or from farmers who are more careful in cleaning and grading their seed.

The Cigarette Boy.

There are in the Kansas State Agricultural College at this time about one hundred young men who are thoroughly addicted to the use of cigarettes or a strong pipe, while a great many others indulge occasionally in the use of tobacco in some form. These young men are somewhat below the average of their age in size and weight, have something of the "lean and hungry look," and are more or less predisposed to sore eyes, weak heart, sore throat, stomach trouble, "short wind," and the like, and what is most serious of all, perhaps, they rank very low as students. On the other hand, the majority of these young men are affable, well-dressed, gentlemanly in their manners (except when smoking), and, withal, very pleasant and agreeable persons to meet, with the exception aforesaid.

Now, it is furthest from the purpose of this paper to offer a general criticism of smoking. Nor is it intended to cast any adverse reflections upon this College. The percentage of cigarette smokers is probably as low here as in any other institution of the kind. The truth is that tens of thousands of the best men of the land are smoking habitually what they call "good cigars." They represent practically all the important occupations and professions, learned and otherwise, and they pay about $150,000,000 yearly for their cigars. I believe that this practice of smoking is growing more common every year, and that it will continue among us without abatement for many years to come. Men without doubt get a great deal of pleasure out of their smoking, and the injury to health is in most cases rather slight, provided the habit is not begun before physical maturity is reached. Admittedly, the smoker gets mental and physical exhilaration out of his cigar or pipe. It gives him a much more agreeable frame of mind and causes his cares to flee away. But the practice is none too clean, is somewhat selfish, and is very expensive. Among fifty representative smokers interviewed, every one admitted that the practise resulted in a net loss and that it ought never to be taken up, at least before maturity.

But the cigarette boy is a class unto himself, and the problem relating to him is unique. He begins the practice "just to have fun," and he is usually in the clutches of the habit before he realizes its seriousness. Moreover, the ill effects of cigarettes upon young boys and youths are so marked that their physical, intellectual and moral natures are often permanently impaired. Comparatively few of these youths ever get beyond the freshman year in college. They are soon forced out into other lines of work and are usually compelled to take subordinate positions.

Of the many cases that I have examined the average age of beginning the habit has been about fifteen years. There are, however, in the public schools of the State, according to an estimate made from records on file in my office, about 5000 young boys who are habitual cigarette smokers. These boys begin the habit at an early age and are nearly always weak in body and mind as a result of the practice. Out of 2336 of these public-school boys only six were reported "bright students." A very few others, perhaps ten, were "average," and all the remainder either "poor" or "worthless" as students. Of 100 such boys who were measured it was found that they were below the average of their age in height, weight, and chest expansion, and that there were many other evidences of physical defect.

During the past two years I have interviewed personally about fifty of these young men, most of whom were students of this College last year and the year before. Twenty-five of the worst cases are tabulated below. With very few exceptions these twenty-five have quit College. The records will show that these boys remain in College but a few terms, as a rule. There is, of course, occasionally a notable exception. All names are eliminated from the report, and it is confidently believed that no data herewith given will be the means of identifying any of the subjects of the inquiry. The data were secured by means of their own frank statements.

TABLE No. I.—Showing physical condition of twenty-five cigarette smokers.

Number.....	Age begun..	Cigarettes..	Pipe.....	Inhales.....	Throat.....	Eyes.....	Chest.....	Short wind..	Heart.....	Thin flesh....	Under size...	Stomach....	Remarks.
1	15	1	1	1	....	....	....	....	....	1	1	....	Looks sickly.
2	15	1	....	1	1	1	....	1	....	....	....	....	Trying to quit.
3	14	1	1	1	....	....	....	1	....	1	1	....	Very nervous; "could quit."
4	12	1	1	1	1	....	1	1	....	....	1	....	Poor student; had to change to pipe.
5	10	1	1	1	1	1	....	1	....	1	1	1	Body debilitated; public sch. student.
6	13	1	1	....	....	....	....	1	....	....	....	....	Dull and lazy; not studious.
7	12	1	1	1	1	1	....	1	....	....	....	....	Little, pinched looking.
8	13	1	1	1	1	....	1	1	1	1	....	...	Ruined his health; forced to the pipe.
9	16	1	1	....	....	....	....	....	....	1	....	....	Tall and lank.
10	9	1	....	1	1	....	1	1	1	....	1	....	Not in College; 50 cigarettes per day.
11	10	1	1	1	1	....	....	1	1	1	....	1	Had to quit College account failures.
12	11	1	....	1	1	1	1	1	....	1	....	1	Desperate attempt to quit; failed.
13	8	1	....	1	1	....	1	1	....	1	....	....	Bad heart, 70 per day; not in College.
14	12	1	....	1	....	....	1	1	....	1	1	1	50 cigarettes per day; "enjoys them."
15	16	1	....	....	1	1	....	....	....	....	....	1	Poor student.
16	12	1	....	1	....	....	....	1	1	1	....	1	Physical wreck; quit 3 mos. while sick.
17	15	1	....	1	....	1	....	1	....	1	....	....	Hearing impaired; voice squeaky.
18	12	1	1	1	....	1	....	1	1	1	....	1	Weak-minded, worthless loafer.
19	10	1	....	1	1	....	....	1	....	1	1	....	Nerves shattered; not Col. student.
20	11	1	1	1	1	1	....	....	....	....	....	....	Dizzy, fainting spells; in public school.
21	12	1	....	1	1	....	....	1	1	....	....	1	Bright looking with clear complexion.
22	11	1	1	1	1	1	....	1	....	1	1	1	Has tried often but can't quit.
23	16	1	1	1	....	....	1	1	1	1	....	....	Very nervous.
24	15	1	....	1	....	....	1	1	1	1	1	....	Sallow.
25	15	1	1	1	....	1	....	1	1	1	....	1	Bright, intelligent, nervous.

Only comparatively few of these youthful smokers are ever able to quit after the habit has been thoroughly acquired, but they are usually able to change from cigarettes to a pipe, which is somewhat less hurtful. The tendency just now at this College is to resort to the pipe and to discontinue the use of the cigarettes. Some of our eighteen-year-old youths are now carrying pipes that are strong enough to make their grandfathers dizzy. There are many reasons why the smoking habit is very difficult for boys and youths to overcome. (1) The first and most direct effect of the practise is that of soothing the body and exhilarating the mind. For the time being the youthful smoker feels better and his mental problems tend to clear up. The whole world of affairs that relate to him assume a much more pleasing and more satisfactory aspect. (2) Those who would have him discontinue the practise urge that such discontinuance will make him in all respects a better and worthier person, but he feels best and worthiest while he is smoking and meanest and least worthy after he has quit for a day or two. (3) One of the most pleasant experiences of life is that of a feeling of fondness for the company of others. This feeling is at its height during or just after the indulgence of the smoking habit. The youth, then, likes everybody and shows happy dispositions toward those with whom he is associated. But after a few hours' abstainance from the habit the converse is true. The victim is "blue" and "glum" and "groggy," to use his own expressions.

For reasons given above and others that could be given, I have come to the conclusion after many years' study of the matter, that an ounce of prevention is worth a ton of cure. And so it is urged here that parents do all they can to safeguard their boys against beginning this insidious habit, especially while the latter are between the ages of seven and sixteen. Gain their confidence and talk over their private experiences with them. Do not absolutely forbid them to smoke and threaten them with punishment if they do, but rather appeal to their manhood and make them believe that such a practice is unworthy of them. Many have found it very practicable to offer the boy a reward of so much money, or of some other prized object, provided he will not smoke or drink intoxicants before he is of age or until he has finished his education. It is well to promise him that he may then have your full consent to do as he pleases about such matters. It is very probable, of course, that he will not take up these practices after that age has been reached. It must be remembered that it requires but a small incentive and little effort on the boy's part to keep from

beginning these habits. He needs merely to *desire* not to begin. But once these habits are fully acquired, the combined efforts of himself and his parents and teachers may prove ineffective in breaking up the practice.

During the College year 1905-'06 I secured through disinterested persons two lists of names of students, (1) fifty young men who were habitual cigarette or pipe smokers, and (2) fifty young men of the same class rank who were non-smokers. Those who selected the names knew nothing about the use to be made of them. I then obtained from the College records of the preceding term the final grades and other data given below.

TABLE No. II.—Showing final grade, average, number of failures and number studies dropped by 100 young men—50 smokers and 50 non-smokers.

Smokers.								Non-smokers.							
Number.	Average.	Dropped.	Failed.	Number.	Average.	Dropped.	Failed.	Number.	Average.	Dropped.	Failed.	Number.	Average.	Dropped.	Failed.
1	61	2	4	26	83	0	0	1	80	0	0	26	54	1	4
2	70	0	1	27	60	0	6	2	85	0	0	27	86	0	0
3	54	3	2	28	55	1	3	3	84	0	0	28	71	0	2
4	73	0	5	29	87	2	2	4	77	0	0	29	85	0	0
5	53	2	2	30	72	0	2	5	89	0	0	30	85	0	0
6	55	3	2	31	61	2	2	6	91	0	0	31	82	0	1
7	70	0	1	32	82	0	0	7	77	0	1	32	76	0	1
8	72	2	1	33	82	5	2	8	78	0	2	33	78	0	0
9	67	1	1	34	45	1	7	9	78	0	1	34	81	0	0
10	74	0	1	35	51	1	4	10	76	1	2	35	81	0	1
11	79	0	0	36	61	6	2	11	71	0	3	36	82	0	1
12	57	0	4	37	43	3	2	12	81	0	0	37	87	0	0
13	45	0	7	38	77	0	1	13	76	1	1	38	76	1	2
14	73	0	2	39	81	3	1	14	93	0	0	39	81	0	1
15	83	0	0	40	75	0	2	15	90	0	0	40	73	0	1
16	79	0	0	41	68	0	3	16	86	0	0	41	58	1	3
17	71	0	1	42	59	0	5	17	81	0	0	42	85	0	0
18	53	1	3	43	58	1	4	18	66	0	2	43	95	0	0
19	67	1	1	44	70	2	2	19	79	0	1	44	.....	....	....
20	59	2	3	45	82	0	1	20	88	0	0	45	69	2	1
21	78	0	0	46	43	2	4	21	90	0	0	46	88	0	0
22	78	0	0	47	67	0	2	22	78	1	1	47	69	1	3
23	71	2	2	48	66	0	3	23	81	0	1	48	74	0	0
24	78	0	0	49	67	2	2	24	76	0	2	49	85	0	0
25	85	0	0	50	66	0	4	25	77	0	2	50	78	0	0
				50	62.28	47	108					50	79.83	9	38

It will be seen from the table that the smokers made an average of 17.53 per cent lower than the non-smokers and the former dropped 84 per cent of the subjects discontinued during the term by both classes and that they made 74 per cent of all the failures. Nine smokers and twenty-five non-smokers have clear records. I feel confident that an investigation would result in showing that these boys who become heavy smokers so young will eventually be forced into the inferior and subordinate positions for their life work.

WILLIAM A. MCKEEVER.

The Pennsylvania Germans.

The German Americans are composed of many widely varied types, among which not the least interesting are the Pennsylvania Germans. These differ radically from all other German Americans in being descendants of persons that settled in America more than 150 years ago. Hence they know little about affairs in Europe; they took no interest in the Franco-Prussian War, nor do they concern themselves with the present social and economic problems in Germany, and the names of German authors, princes and statesmen are practically unknown to them. They are bound by no ties of kindred to near relatives in the old Fatherland (die lieben Verwandten in der alten Heimat), as are nearly all other German Americans. And yet, although these people are Americans by birth, they are Germans in language and customs. Until very recently German has been their mother tongue, and there are still living many of them, born in America, and descended for half a dozen generations from natives of this country, who cannot speak any English whatever.

The German people had no part in the discovery and exploration of the Western Hemisphere. The reason for this was that what is now Germany was then broken up into petty states, of which the leading ones did not border on the sea. It was not until in 1683, shortly after William Penn had founded his new colony, that any considerable number of Germans migrated to America, and they came then, not as representatives of any German state, but as persecuted exiles. The first German settlement in Pennsylvania was made at Germantown in 1683, and consisted of thirteen families, most of whom were from Cleves. They were led by Francis Daniel Pastorius. At the celebration attending the raising of the first house, William Penn himself was present and partook of a great dinner with the settlers. The Thirty Years' War, which raged in Germany from 1618 to 1648, wrought indescribable havoc and desolation in that land. At its close two-thirds of the inhabitants had been killed or driven out. The greatest amount of pillage and ruin took place in the Palatinate, a duchy or electorate, of which Heidelberg was the chief city. It is no longer a separate entity, but has been included in Rhenish Bavaria, Baden, and other surrounding states. As the people of the Palatinate were Protestants and on the French frontier, they were the victims of the most ruthless persecution and devastation from France. Heidelberg was destroyed in the Thirty Years' War, and again in 1688, when the French demolished the castle and laid the city in ruins. Once more the place was rebuilt, only to be destroyed by the French a

third time, in 1693, when fifteen thousand homeless people were forced to flee for their lives into the neighboring woods.

The merciless religious persecution of Louis XIV, together with the licentious, plundering brutality of the French soldiery, made the Palatinate almost unendurable for its inhabitants. In 1709, not less than 13,000 persons—men, women and children—fled through the Netherlands to London, where they appealed to the English government for assistance in settling in the colonies. Some were settled in Ireland, others in the Carolinas and Virginia. Still others were sent to New York. Here there developed a great deal of friction between the German settlers and the provincial government, with the result that most of the Germans soon removed to Pennsylvania. Thenceforth the Germans in America advised their European relatives and friends to come to Pennsylvania and to avoid the province of New York, and, as a result, a vast migration of Germans to the former colony set in during the years 1700 to 1750, so that by the middle of the century 100,000 Germans had settled in Pennsylvania. These immigrants consisted almost entirely of persecuted, non-resisting sects of Protestants from Southern Germany. What constitutes the real Pennsylvania German stock is descended from settlers who came to America before the Revolution. Germans in Pennsylvania who are recent immigrants should not be classed with this body of people, who have customs, traditions and a dialect very different from those of any other branch of the German race.

With the settlement of the Mississippi Valley, after the Revolution, a great many of the Pennsylvania Germans moved westward and became pioneers in the new regions. Hence, to-day, people of this stock can be found in all of the states of the Middle West in considerable numbers. In mingling with other people they have lost many of their peculiar traits, but continue to cling to much that is distinctive in customs and life, and to be proud that they are not Europeans, but come from "'drin 'raus." Indeed, they feel a decided superiority to the foreign-born German.

The Pennsylvania German dialect (or Pennsylvania Dutch, as it is often incorrectly called) is a variation of the literary High German language. It resembles somewhat some dialects of Germany, especially that spoken in the Palatinate, but is different from all of them, though distinctly High German rather than Low German in its characteristics. It has been developed in America during the long period of time that the Pennsylvania Germans have been in this country and cannot be found in Europe. Unlike some of the Low German dialects, it is not so different from the

literary language but that any one familiar with the latter can readily understand it. Among the most noteworthy peculiarities are the following: Some of the vowel sounds are altered. *Ei* is pronounced *e* (like English long a), and *a* is altered to the sound of *o* (like English long o), hence *Kein* becomes "*kay*" and *Wahr* becomes "*wor.*" The umlauts lose their peculiar German quality and are altered to the English sounds nearest to them. Final consonants and vowels are often dropped; hence *Lieben* becomes "*lieba*" and *Kommen*, "*komma*," etc. Another notable feature is the large number of words borrowed from the English language, some of which are, *buggy*, *store*, *depot*, *railroad*, *post-office*, *farmer*, etc. They also sometimes use the English idiom *do* in the emphatic form, as *er tut gehen* instead of *er geht.* As German is their mother tongue, the poorly educated among the Pennsylvania Germans, like other German Americans, often use German idioms in their English speech, such as, "Are you going with?" "The bread is all," "It makes nothing out," "What is loose?" "What for thing is that?" and many others.

Most of the Pennsylvania Germans are farmers. In their domestic life they are characterized by thrift and industry. The genuine Pennsylvania German rises at four A. M. in summer and retires at sun-down. "Six days shalt thou labor," is interpreted literally, and books, papers and amusements have very little place in his life. The sons and daughters are early put to hard and constant work in the fields or about the house. As a result, the homes bear every mark of thrift and prosperity. Capacious red barns, well-cared-for herds of milch cows and other cattle and droves of prosperous hogs characterize his farm, for he is not afraid of the drudgery of multitudinous chores as his American neighbors sometimes are. The house, too, is usually large, but often poorly furnished, and the family usually lives in the kitchen, or "summer kitchen," leaving the main part of the house closed and dark, except on state occasions. The Pennsylvania German has a great predilection for building his house on a sloping hillside, so as to have a "cellar kitchen," or basement, under the house proper, which is used as the living room. Well-kept gardens, splendid orchards, and poultry of all kinds are a part of the belongings of these thrifty and permanently located farmers. "Schnitz" (dried apples) constitute one of the principal articles of food, and are prepared in large quantities during the apple season.

Although the first speaker of the House of Representatives, Henry Muhlenberg, was a Pennsylvania German, the race as a

whole has been little interested in public questions. They came to this country to escape wars and political tumult. They longed for a home where they could live unmolested, from the fruits of their labors, and rear their children in the faith of their fathers. Many of the sects were opposed to wars, the taking of oaths, and holding office, and all of them took very little interest in political affairs. As a class they read little and are not well informed as to the affairs of the great world outside of the neighborhood in which they live their quiet lives. Yet they are a sturdy, thoroughly loyal body of Americans and are never led astray by any new political or revolutionary movement.

The Pennsylvania Germans are of a strongly religious temperament. None of them are Catholics, and only a small per cent are Lutherans. The original settlers at Germantown were Mennonites, and these were followed by many other sects, mostly of the quiet, non-resisting, Quaker type. The Moravians, from Herrnhut, founded Bethlehem and Nazareth in 1740. Later the Schwenkfeldians, Dunkards and Amish came over in goodly numbers. All these sects, while originating in Europe, expanded the most in America. But Pennsylvania is also remarkable as the birthplace of a large number of new religious organizations, all of which began among the Germans, although some of them have since become entirely English speaking. Philip Otterbein here founded the United Brethren Church, John Winebrenner, the Church of God, Jacob Albright, the Evangelical Association, John Oberholtzer, the New Mennonites, Jacob Engle, the River Brethren, and George Rapp, the Economy community. Nearly all of these sects have since been further divided into branches. Many peculiar beliefs are held by some of them. Some practise foot washing as a religious ceremony, others wear a peculiar garb, some do not sanction the wearing of buttons, but use hooks and eyes instead, while some believe the men should wear full beards. Quaint and narrow as are many of these quiet farmer folk, yet on the whole they are very sincere, temperate and upright in their lives.

The German literary product of the Pennsylvania Germans has been voluminous, but, as might be supposed, has been largely on religious topics, and consists mainly of histories of the numerous denominations, books of doctrine, collections of sermons, religious hymns, and the like. Their writings are practical and serious. With the romantic or the Mediæval, or with literature dealing with the beauties of nature, they have no sympathy. The American nation in general has taken but little notice of these people, largely because of their quiet, unpretentious lives. Charles Godfrey Le-

land, in his "Hans Breitman ballads," satirized the Pennsylvania "Dutchman" rather as an unsympathetic outsider than as an interpreter of their spirit. It remained for Helen Reimensnyder Martin, in her delightful book, "Tillie, a Mennonite Maid," and her short stories in McClure's Magazine, to present to the world a true and sympathetic picture of the real Pennsylvania German, with his ofttimes sordid frugality, his toilsome life, his unbending obstinacy, his stern and narrow piety united with his conscientious uprightness and sincerity, and his warm and wholesome domestic affection. With all its peculiarities, the American nation possesses no more valuable or worthy element in its population than this transplanted race of people of German blood and American nativity.

EDGAR G. MEINZER.

Mrs. Ed. Greeley, Prof. Henrietta Calvin and Mrs. Willard went to Enterprise last Friday and were entertained at the beautiful home of C. B. Hoffman. In the afternoon Mrs. Calvin gave a demonstration before a large number of ladies on "Parker House rolls, chicken croquettes, and coffee." In the evening she gave a demonstration on "Salads" before a company of about seventy-five people. After each demonstration a luncheon was served, that in the evening being quite a sumptuous affair. The house was beautifully decorated with pink carnations and ferns, and the College quartet of that place furnished excellent music. On Saturday the ladies were entertained in Abilene at the splendid residence of Mrs. Daisy (Hoffman) Johntz, a former student here, who was married last fall. The ladies at Abilene were very enthusiastic over the work of Mrs. Calvin, and the trip was a very enjoyable one.—*Nationalist.*

The new universal language, "Esperanto," is attracting world-wide attention. In order to give the people an opportunity to learn all about it, hear it read, and to see books printed in this language, the City Library Association has arranged for a public entertainment. A paper on "Esperanto" given by Mrs. H. F. Roberts will be the principal feature of a pleasing program to be given in Institute Hall in the near future.

At the regular session of the City Library Association for February a course of entertainments was arranged for, the same to be given at intervals in Institute Hall for the benefit of the library. To-day (Saturday), March 9, Prof. Henrietta Calvin delivers a lecture on gelatins and gelatin desserts, demonstrating the same. Admission 10 cents.

THE INDUSTRIALIST

Published weekly during the College year by the Printing Department of the

Kansas State Agricultural College

Manhattan, Kansas.

PRES. E. R. NICHOLS.....Editor-in-Chief
PROF. J. D. WALTERS.....Local Editor
PROF. J. T. WILLARD.....Alumni Editor

Local Notes.

The Legislature has done well by us.

The Horticultural Department has some fine lettuce to sell.

The annual corn-judging contest between the classes will be held Wednesday, March 13.

Student Victor Manalo has received word from the Philippines that his father died last December.

The College Band annual concert given Friday night in the city opera-house was well attended and a grand success.

Professor Eyer and some of his senior students installed a five horse-power motor in the new seed-house this week.

There are seventeen varieties of cineraria hybrids and five varieties of carnations in full bloom at the greenhouse. The cineraria are the finest we have ever seen.

D. H. Zook, who has been foreman of the farm for about three years, has resigned and left for Kit Carson, Colo., where he has a ranch. Floyd Howard will take his place.

Senior student J. L. Pelham, who has practically completed the agriculture course, will leave for Hays Experiment Station on March 12 to take charge of the horticulture work out there.

Assistant Marjorie Russell's class in domestic science visited the residence of Professor Walters one day last week to study modern arrangements of plumbing, heating, and ventilation.

Student Henry Winter, of the architecture course, has just completed plans and specifications for a new residence which his father intends to build on Bluemont Avenue, near the Athletic Park.

Senior students Cooley and Elsas went to Blue Rapids Friday to make tests at the water-power plant. They will use the data in writing their theses. Their subject is "Hydraulic Electric Power Stations."

The Dairy Department is making nearly six hundred pounds of butter per week and sells about one hundred quarts of cream per day to students. During the past two weeks it manufactured about four hundred fifty pounds of cheese of several varieties.

Prof. Henrietta Calvin, Asst. Marjorie Russell and seventeen young ladies of the short course in domestic science went to Topeka Monday morning and spent the day inspecting the Wolf packing-house and Christ's hospital. The outing was much enjoyed by the girls.

The fine March weather of the past week has brought a large number of visitors to the College. There were some on the campus every day.

Last Monday the building committee of the College Y. M. C. A. opened bids for the construction of the new building. But two bids were received, those of C. A. Deere and J. M. Correll, and as each exceeded the architect's estimate they were rejected. The committee will readvertise for proposals

Shige Suzuki, a young Japanese who studied dairying here for about two years, has left for his old home at Nagasaki. Shige is a fine young man. He made many friends while here and all predict for him a successful career in "the kingdom of sweet-scented flowers and beautiful gilt butterflies," as he sometimes called it when he had a touch of homesickness.

On Tuesday morning after chapel exercises in the Auditorium, Instructor Dean spoke of the achievement of the College athletic teams last year, and in the name of the College Rooters' Club presented certain members with beautiful new Jerseys. The garments are white and are ornamented in front with a large purple colored K. In addition each has as many stars as its wearer has been connected seasons with the team.

The third annual Choral Union Concert will be given in the College Auditorium on March 21. Besides the grand chorus of one hundred voices, with orchestral accompaniment, there will be a number of solos by both local and professional talent. The noted tenor, Mr. C. Edward Hubach, will assist in the rendition of the "Swan and the Skylark," and Mr. Halfdan Jebe, one of the most talented violinists in this country, will appear in several numbers of his own composition.

Alumni and Former Students.

Changes of address: J. A. Lewis, '85, 383 Third street, Brooklyn, N. Y.; W. O. Peterson, '97, Bonner Springs, Kan.; R. A. Fulton, '05, 1779 East 25th, Cleveland, Ohio.

We learn from the *Students' Herald* that Henry Thomas, '04, and Ruth Neiman, '06, were recently married; also that Verda Murphy, '06, and Harlow Hudson, of Manhattan, were married in Topeka about two weeks ago, and will live on the Hudson farm west of town.

The Rumford medal of the American Academy of Arts and Sciences, "for discoveries in light and heat," has been awarded to E. F. Nichols, '88, professor of experimental physics in Columbia University. This very high honor has the additional value of being well deserved.

Anna Pfuetze, '99, resigned her position as teacher of domestic economy in the school for the deaf, Olathe, at the close of the winter term, and on February 28 became Mrs. Herbert Julien. Mr. and Mrs. Julien will live in Olathe, where Mr. Julien is engaged in the undertaking and furnishing business.

F. V. Dial, '97, is doing a few months' work in the Zoölogical Department, mounting specimens.

Maude (Knickerbocker) Pyles, '93, sends in her address as 1145 Village Deep, Johannesburg, South Africa. She gives her occupation as housewife, but does not indicate the business of her husband.

We have the following from H. T. Nielsen, '03: "For the sake of convenience in my work, cow-pea and soy-bean exploitation in the South, I have found it desirable to move into Washington and would like to have you change the address of my INDUSTRIALIST from Rosslyn, Va., to 1228 B street, S. W., Washington, D. C."

College Appropriations.

The State Legislature has dealt kindly with the Agricultural College this session. The amounts appropriated are as follows:

	1908.	1909.
Current expenses	$140,000	$155,000
Domestic Science building	70,000	.....
Veterinary building	70,000	.....
Engineering building, etc.	.....	80,000
Boilers and coal-house	5,000	5,000
Library stacks	4,000	.....
Cement walks	4,000	.....
Farmers' institutes	5,500	6,000
Fire stokers	.....	3,000
Pipe machine	1,500	.....
Totals	$300,000	$249,000

The following are the appropriations for the Fort Hays Branch Experiment Station of the Agricultural College:

	1908.	1909.
Current expenses	$10,000	$10,000
Roads and fences	2,000	2,000
Office and fire-proof vaults	.....	1,500
Steam plowing outfit	3,500	.....
Teams and equipment	2,000	1,000
Machinery	1,000	1,000
Pure-bred cattle and experiments	5,000	5,000
Building repairs	500	500
Superintendent's residence	3,000	.....
Cottages	1,000	1,000
Horticulture and forestry	2,000	2,000
Dam and water system (extensions)	2,000	1,000
Totals	$32,000	$25,000

These amounts, together with the regular income of the College, amounting to about $65,000 per year, will place the institution in condition to do its work and to prepare for the reception of the rapidly increasing number of students that are coming to the great technical school of the State for their education. A number of new laws that have an intimate bearing on the work of the College will be published in the next INDUSTRIALIST. Besides the above appropriations, emergencies of $1000 for farmers' institutes and $4000 for barn at Fort Hays Branch Experiment Station, available in 1907, were passed.

Beet and Garden Contest Instructions.

THE
INDUSTRIALIST

Vol. 33 No. 20

Issued Weekly By
Kansas State Agricultural College
Manhattan, Kansas

"Instructions for Beet-Growing Contest"
J. H. Buffum, Beet-Sugar Specialist
Garden City, Kan.

"Suggestions to Garden Contestants"
R. E. Eastman, Asst. in Horticulture
Kansas State Agricultural College

"How the Boys and Girls may Beautify the Homes"
M. Francis Ahearn, Floriculturist
Kansas State Agricultural College

Published by
PRINTING DEPARTMENT
J. D. Rickman, Supt.

Entered at post-office, Manhattan, Kan., as second-class matter. Act of July 16, 1894.

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Domestic Science, two terms
Dairying, one winter term
Agriculture, two winter terms

¶ A Preparatory Department for students over eighteen in which all the common-school branches are taught each term. Nearly all subjects of the first two years are taught each term, so that it is possible for one to complete the first two years' work by attendance during winter terms only.

¶ Tuition is Free. An incidental fee of $3 per term is charged students living in Kansas. There is no charge for laboratory supplies.

Catalogue or other information free. Address

E. R. Nichols, President

Manhattan, -- Kansas

THE INDUSTRIALIST.

VOL. 33. MANHATTAN, KAN., MARCH 16, 1907. No. 20

Boys' Beet-Growing Contest: Bulletin of Instructions.

A PERSONAL WORD.

It is urged upon the participants in this boys' beet-growing contest that something more than the winning or missing of a prize is dependent upon the outcome. The Kansas State Agricultural College, through its Farmers' Institute Department, is seeking the coöperation of the boys of Kansas in extending the sugar-beet area of the State, and getting each community, represented by you, familiar with the culture of this exceedingly profitable crop. So do not think that the instructions given here are to be lightly considered; they must be followed implicitly. If you have any difficulty, write this department, as we have made provision for a "trouble department," and all needful and pertinent questions will readily be answered. The College is anxious to do all within its power to assist you; the results of your individual efforts are of as much consequence to us as to you. Read every word of this circular before starting in on your work. Each direction must be followed carefully. Sugar-beets are unlike other crops in several particulars, and it is only after long experience that the grower can depend upon his personal judgment exclusively.

Bear in mind all through your part in this contest that the two results on which the prizes are to be decided will be, first, "sugar content" or analytical proportion of sugar in the beets; and, second, tonnage, or the actual total weight of beets produced from your five pounds of seed, after the beets have been topped. The first circular stated that beets would not be judged on "Sugar Content." Since that was printed the factory at Garden City has consented to analyze contest beets, where committees want to use this method. Therefore, each county committee is to decide which way beets are to be judged. Follow directions; don't be afraid to work; and remember that absolute absence of weeds, very frequent stirring of the soil, with observance of all written precautions against throwing dirt on the very young beets, will achieve the results you desire.

SELECTING YOUR PATCH.

A correct beginning largely insures a creditable ending. Extremely important is the choice of your land. Do not jump at the richest spot on the farm; rather pick out a sandy loam that is somewhat dark, yet not mucky. What you want is a piece that has rich humus soil. Ask your father, or whomever you rent the land from, what "humus" means, and the information will go a long way in helping you to find just what you want. Don't select land sandy enough to blow in high winds; it would be too sandy.

But the location of your patch will mean much toward your success. Find a patch that is not cloddy, rough, or stony. It is not probable that there is any native sod near you, but if there is, avoid it; old ground should be used and not new sod-soil. Avoid low, damp, sour land; it may look rich, but avoid it. You had better place your patch where there has been corn, or wheat, or cane, or some such crop, for several years past, finding a place that is not surrounded by fences or weeds. Be especially careful that there are as few weeds as possible in the vicinity of your beets; and keep them out all the season through. The best land on the farm is none too good for your experiment, and it is up to you to get it for your own use.

PREPARING IT FOR SEED.

First of all, be clean! Stubble, corn-stalks, lumps, chunks, sticks, and stones, all are the greatest foes to your success. This applies more truly to sugar-beets than to any other crop.

Having selected the site of your patch, next get down to business and prepare it for the seed. And here is where you should follow our directions with scrupulous care. If you are in a locality where the ground freezes pretty hard during the winter, you ought to take a place that was plowed last fall. If you cannot get fall-plowed land, plow immediately after this circular reaches you, condition of ground permitting, the piece that you do select. We will give brief directions for both ways:

If Plowed Last Fall.—Choose a piece that was plowed not less than eight inches deep. Plow it again now, only this time a little shallower—say six inches; that will do very nicely.

If Not Yet Plowed.—Get busy and plow the piece not over one or two inches deeper than it was plowed the last time. If you cannot find out how deep it was plowed the last time, plow it now ten inches deep. It will cost a trifle more but will pay, because the tap-root of the beet goes way down; and therein lies the secret of its being a perfect beet and showing a high test.

Whether Plowed Last Fall or This Spring.—Put in good honest work in getting the ground ready. First wheel harrow, then do any way, anything to pulverize the soil and make it soft, fine and dry on the surface. Cultivate it and work it and tooth harrow it just as many times as you possibly can before planting. Do not let the surface get caked or baked. Get one horse and do this work yourself. Make the ground so fine and soft that the little seed balls will nestle close in the dirt and not be delayed in germination because there is a lot of air and light circulating between lumps of dirt and such things as stones, etc.

Take off all stubble, stones, straw, or any objects that could possibly keep the seed balls open to the air and light. Be sure that your ground is finely pulverized and soft as you can make it.

NEXT COMES PLANTING.

Now you're off! Get out your seed and we'll go to the field. Your seed should be in the ground by the middle of April at the very latest. There are reasons for this, which you will discover later on.

Now you've got to where our instructions cannot be ignored. Mark out your patch carefully, placing the rows *not over* eighteen inches apart. This is important. Sow your seed in a drill, placing it, of course, not too thick. No exact directions can be given you as to how thickly the seed should be drilled—use your own judgment.

Next, as to the exact time of planting. Some time during the first part of April, not later than the middle of that month, there will probably come a rain. If it is not excessive, wait a day or two, and then when the ground is both warm and moist go out and sow your seed. If you are sure that these conditions of soil exist, put your seed in not more than three-fourths of an inch deep. Find out if your locality is considered to have very moist soil—that is, ground that retains moisture steadily near to the surface—and if so, plant the seed only one-half inch deep. Get the seed in by the middle of April whether a rain comes or not.

WHEN THE BEETS ARE UP.

Now you're in for it! Your efforts and conscientious labor right at this point will be your great chance of success.

Of course you went out every morning to see if they were up; but now that they are, you can feel that your crop of beets (and prize) is in sight. Just as soon as your beet plants show three leaves, you are to begin "bunching and thinning." It is done in this way: Take a hoe and cut out the beets in the row, leaving

little bunches of them eight inches apart. There are to be several beet plants in each one of the bunches. Go over the whole field in this way. Then start in all over again, this time getting down on your hands and knees and remaining there throughout each row. Use nothing but your hands for the following operation:

Select from each bunch the strongest and healthiest of the several plants and leave it to grow alone, uprooting and throwing away all the others in the bunch. Press your fingers down on each side of this best one when you pull the others up, so that it will not be uprooted and destroyed or disturbed in any way. Remove all weeds and grass, no matter how small they may be. Press the soft dirt down about the remaining beet plant, taking care not to get dirt on the tiny leaves. Remember, just as soon as the three leaves appear, begin this work and do not delay it. It cannot be put off. Weeds and grass and rains will get the start of you and seriously interfere with this important part of your work and create a greater disturbance of the beet roots the longer you wait. If this thinning is not done within two weeks from the first appearance of the three leaves, your crop is ruined.

CULTIVATION AN ESSENTIAL TO SUCCESS.

Your principal work is by no means done when you get your beets fairly under way by bunching and thinning; nor even is it enough that you henceforth keep your patch free from weeds. Cultivation should be your constant watchword until the beets have attained a considerable growth.

Just a bit about weeds. We take it for granted that you will keep them out absolutely. Hand work will accomplish this, carefully pulling out the grass and weeds as fast as they appear among the growing beets. The free use of a hoe will keep them removed from between the rows.

By cultivation we mean all stirring of the soil. You cannot do it too much. When the beets are so large that their size interferes with the use of a horse hoe, keep on using your hand hoe in stirring up the soil. That period will come after school has closed, so that you will have plenty of time for it. The last month or two there will be very little of this work to do.

If you have an excess of rain, or it falls very heavily, make little ditches through your field to carry off the surplus water so that it will not drown out the little beets. This applies only when the rain falls very heavily. If there is but little rain during the first few weeks of the beet's growth, your course of action will be a more frequent cultivation. Keep the surface so pulverized and

soft that it will form a sort of dry dust mulch through which the underlying moisture will find it very difficult to evaporate.

If you employ a horse cultivator in your work, use flat knives while the beets are very young; then as they get older and larger, go deeper. In your first cultivation, shields or "fenders" are necessary on the cultivator to prevent covering the plants. Do not work too close to the plants while they are young. As they grow older, work the cultivator closer, and even throw a little dirt about the beets. When the beets are so large that their leaves touch between the rows, horse cultivation will become injurious and should cease. First, always and ever, keep your field free from weeds.

An Important Word.—While your beets are young and tender they will be inclined to wilt in the hot sun. Do not, however, become alarmed. No harm will likely result if you are cultivating as directed. They will droop through the day, but probably revive at night. If they should fail to freshen up, and remain wilted for several days in succession, it might then be necessary to water them a little, but such an emergency would be exceptional.

HARVESTING THE BEETS.

It is altogether too early to give you any instructions on this point. This work will be done about five months after planting, when the tops have turned yellow or brown; but as rainfall conditions during the fifth month will determine the proper time for pulling, special instructions will be sent you at the right time, based on a report of weather conditions from your locality.

WHERE IRRIGATION IS NECESSARY.

In most places where the boys are engaged in this contest, irrigation is not practiced on farm crops. We will, however, give just a few directions for those who live where rainfall is not sufficient water-supply and where irrigation is imperative. Further instructions may be secured through correspondence. The great tendency is to irrigate too much. In the beet's early growth it should be taught to send its tap-root way down after water rather than to seek it at the surface. The latter produces a flat beet that has very little sugar. The very young beets should never be irrigated unless they fail to recover from the preceding day's hot sun. Then you may put water on, using good judgment as to quantity. After the beets are two months old they may be watered more often, but at all times we caution against making the application too generous. When four months old, quit watering altogether, save on receiving special instructions.

SOME NECESSARY DON'TS.

Don't plant more than one-fourth of an acre with your five pounds of seed; and don't plant less.

Don't select ground that has recently been a barn-yard or grazing place, nor again a wet or sloughy spot, or that seems particularly rich and black.

Don't water your beets. Just because you have access to a garden hose or an overflow from windmill or tank, don't think that you will get ahead of some other boy by soaking the water on. While it may be true that some things cannot receive too much water, it is not true of sugar-beets; and there are times when it would be absurd and injurious to give them any water at all. The above applies to the unirrigated or rainfall areas; and if you observe carefully and strictly the directions given you under the head of "Cultivation" you will meet with the greatest success by leaving water entirely alone, save at such times as are mentioned at the close of the paragraph on "Cultivation."

Don't keep digging up a beet or two to see how they are getting along. We have already told you that the two points on which your work will be judged will be tonnage and sugar content. There are so many boys engaged in this contest, and as all are planting exactly the same amount of seed, the contest will be a very close one in point of tonnage. You may smile, but there is lots of truth in the fact that one, two, four or a half-dozen beets removed from the patch could make a difference in your showing.

When we send for samples of your beets to be analyzed, don't select the samples from the outside of the field. They will be the biggest there and probably have the heaviest tops; but those in the center of the patch, and where the beets stand the thickest, will test ever so much higher.

Don't overlook any item of instruction given you here. And if you get in doubt, difficulty, trouble—write.

Don't lose this or throw it away. Your interest in this circular, your familiarity with its every word, your faithful compliance with its spirit and letter and diligent application of the instruction and information it gives means a whole lot to you and to the State of Kansas, throughout all its departments of agricultural activity.

Don't fail to write us if, before the beets come up, the ground becomes baked or crusted over. It will be necessary to rectify this, and we will tell you how to do it.

J. H. BUFFUM,

Beet-Sugar Specialist, Garden City, Kan.

Suggestions for Garden Contestants.

We all like vegetables. They are good for us and are necessary in the diet of normal man. The best way for most farmers and owners of vacant city lots to get these vegetables is to grow them. If they fail to do this, in many cases the family is deprived of the proper amount of vegetables. It requires no great amount of training or education to grow vegetables successfully; neither does it require a burdensome amount of work. In many cases the work connected with growing vegetables on a city lot or a larger plot is but recreation. The story of a farmer's garden need not be one of anxiety and of failure, but it should be one of pleasant anticipation, of intelligent progressive effort, and a bountiful harvest of good, fresh, crisp vegetables.

The growing of a successful garden either on the farm or in the city means some thought. It means planning, it means reading and discussion with neighbors and friends and members of the family in regard to the ways and means of producing this garden. The questions, "What shall we grow?" "How can we best grow it?" "How early shall we sow the seed?" "What vegetables shall we plant for canning and storing for winter use?" "How much and how many kinds of vegetables shall we plant in order that our family shall have vegetables of some kind the whole year through—spring, summer, and winter?" "How shall we do this in order that these supplies may come from our own effort, from our own storage room, from our own canning or putting up?" "What shall we plant in order that it will be no longer necessary for us to drive several miles for tomatoes, cabbage, turnips, or other vegetables which we may desire?" "What can we do in the way of growing vegetables to stop the drain of cash which is necessary when we go to the store and buy these vegetables?" "What can we grow in order to have vegetables that are fresh and crisp and not wilted and tough and unpalatable, as we often get them from the stores?" Such questions as these will naturally come before us. The solution of this problem lies in the hands of practically all farmers of this State. On nearly all farms in this State there is plenty of land which is adapted to the growing of vegetables. We have rich soil; we have locations especially favored as regards moisture; we have certain fields which are well adapted as regards the lay and exposure, and ordinarily we can find such lands near the house, where the garden should be grown.

It requires but a small plot of ground; less than one fourth acre of land will go a long way towards producing all the

vegetables used by an ordinary family, excluding potatoes. Any one who is contemplating growing a garden should select a plot of land which is near the house, a plot that is rich, a plot where a proper amount of moisture is assured, and a plot that is not likely to be overrun by various animals on the farm.

After selection of the land, the question of preparation of the soil is next of importance. Ordinarily it is best to add a covering of well-rotted barn-yard manure during winter, and plow deeply in the spring. Use a disc and a spike-tooth harrow to fine and compact the soil and make a good seed-bed. The vegetables which you grow should be planted in straight rows. The rows should be far enough apart so as to allow cultivation with horse cultivators, or with crops like radishes, and on smaller plots of land cultivation with hoes is allowable. Practice level cultivation. Plant the early vegetables as early as possible.

If the amount of land available for a garden is limited, practice rotation as much as you can. As soon as the early vegetables have been removed from the garden, plant something else on the same plot of ground. By doing this you can grow two or three crops in one season here. Do not allow the weeds to get a start of you and take possession of the garden. It is better to have a small garden well tended than a large one overrun with weeds. It is best to grow early vegetables, mid-season vegetables, and vegetables of late summer or fall. Grow some that you can can, or dry or store in some other form, and grow all of them to use in your own home. Every farm should have a few hills of rhubarb. This plant requires but little care and it produces one of the most delicious of early spring vegetables. Likewise some horse-radish should be planted. Do not omit tomatoes from the garden. Sweet corn should be found in all gardens, except the very smallest. Grow some of the second early varieties and of the main crop varieties. Usually the earliest kinds are not so successful. In our choice of varieties it is always well to plant with the idea of having some for winter use. Among the root crops which can be used in this way turnips, beets and salsify are among the best.

The contest for boys and girls which is to be started this year offers a good opportunity for farmers' boys and girls to take up this garden work. It will be an education to those who attempt it, and in most cases will mean a considerable source of profit to the family. Seed should be secured from some good firm as soon as possible. Sow in rows ten or a dozen kinds of vegetables of those most commonly used. Sow onions, peas and radishes as soon as winter freezing is past, and by the first of May or sooner

have tomato, cabbage and pepper plants ready for the garden. At this same time plant seed-corn of Adam's Early, Early Minnesota, Country Gentleman or Stowell's Evergreen. Plant string beans, cucumbers and squash at about the same time that you plant corn. Be systematic in your work. Get the most out of your ground. Make your garden look good the whole summer through. Plant your garden and care for it in such a manner that you can take pride in it; that you will be able to take prizes in vegetable contests at county fairs and other places; that you will be able to produce something that will be of material value in the maintenance of the family.

A plot of ground fifty by one hundred feet will be large enough for such a garden, with the exclusion of potatoes. We would ask all boys and girls to make the attempt, and even though you fail the first time it will benefit you for other efforts in the same direction. It is worth doing.

In conclusion we wish to urge more of the citizens of this State to try to grow a garden. It is within the power and means of most of us to do this. We must not be discouraged if for a time there is a lack of rainfall, and with proper care in the beginning we will never have occasion to despair because of weeds. Persistent effort has much to do with success in growing vegetables. The question of seeds need not be a hindrance, because good garden seed can be purchased from several good firms.

R. E. EASTMAN, *Instructor in Horticulture, K. S. A. C.*

How Boys and Girls May Beautify Home Grounds.

The first part of the grounds to attract attention is the lawn. The word "lawn" generally suggests the idea of closely clipped grass and borders, but in reality the lawn includes trees, shrubs, flowers, rockeries, lily-ponds, pergolas, and shady retreats. However, the lawn proper may be considered as the open space that is kept closely trimmed by the lawn mower.

In making a lawn the first thing to be considered is drainage, but the average lawn in this country does not need any drainage except in places where water is apt to lodge. Grading the lawn so that the water may be equally distributed over the surface will generally settle the question of drainage.

Next to claim attention are the stones, weeds, and roots. These should be removed from the soil and the ground plowed at least one foot deep. Small areas may be spaded instead of being plowed. Deep and thorough culture is necessary to success in

making a good lawn. After this the ground should be roughly graded and covered with a heavy coat of well-decomposed manure. Dig this manure in, rake the surface, and again remove stones and weeds that may come to the surface.

Now the question of grass seed enters. Kentucky blue-grass mixed with white clover or red-top are standard mixtures in this country. Sow from three to six bushels to the acre. The seed should be sown evenly, and after sowing should be raked with a fine-toothed rake and the soil made firm with a heavy roller.

Cut the grass when it is three to four inches high. Frequent mowing tends to thicken the grass. Now the future lawn depends entirely on the care given the grass. Water in dry seasons, add new soil where the grass has died out and sow more grass seed. Manure or fertilizers should be added from time to time and all weeds pulled out and burned.

Large lawns may be planted with trees and shrubs, but small areas are apt to have a crowded appearance if too many trees or shrubs are scattered over the lawn.

Having disposed of the lawn, the next to claim attention should be the flower beds and the flower gardens. Here is a source of pleasure open alike to rich and poor, large and small. Old and young alike will find the flower kingdom a never-ending source of wonder and an interesting study. A small piece of ground filled with tastefully arranged flowers will lend a certain cheerfulness and brightness to the home.

Generally speaking, a happy home is apt to be the one surrounded by beautiful flowers and a green, well-trimmed lawn. Parents should endeavor to get their boys and girls interested in the welfare of the flower garden. School gardens form an important part of the pupil's education in many of the large eastern cities. School children are taught how to raise flowers and vegetables not only for the pleasure derived but also for market purposes.

Large areas of lawn are sometimes improved by adding flower beds, but as a general rule the flower garden should be given a separate place in the home grounds. A convenient spot should be chosen, easily reached from the house and close to water. The garden should get the benefit of the sun's rays during the entire day. Good rich soil is of course a necessary requisite, and this should be well worked before the flower seeds are planted.

The garden may contain annuals and perennials, although better results are obtained by growing them in separate beds. A perennial garden will furnish a great deal of satisfaction in the shape

of beautiful flowers and foliage. In early spring the bird's foot violet, with its dark green, handsomely cut leaves and pale or deep blue flowers, makes its appearance. The dwarf phlox (*Phlox subulata*), with its small pink flowers, lends a handsome appearance to the border. To attempt to describe even the choice plants for the perennial garden would be futile, but it would not be right to leave the subject without mentioning the irises (*Flag lily*), aquilegias (*Columbine*), the hardy asters, hard phloxes, holly hocks, poppies, campanulas, candytuft, larkspurs, crocus, lilies, daffodils, tulips, daisies, fox gloves, and besides these there are hundreds of others that make a strong collection from which to make a selection. The perennial plants, with some few exceptions, will be benefitted if taken up every two years, the roots divided and reset. In severe winters a mulch of leaves or rubbish will be beneficial to the perennial plants.

Annual plants are generally divided into three classes, hardy, half hardy, and tender, but they all do their share in giving to the garden bright colored flowers, filling the air with their sweet fragrance. Give these plants well-prepared soil and avoid planting until all danger from frost is past. Select an open sunny spot, as many annuals dislike shade. Some of the following annuals will do well in almost any garden: Calendulas, sweet peas, scarlet sage, phlox drummondi, vinca rosea and vinca alba, coleus, pyrenthrum, ageratum, dusty miller, sweet alyssum, castor-oil bean, canna, dahlia, verbenas, petunias, snapdragons, and a large list of other annuals too numerous to mention.

The seeds for most of these plants, with the exception of scarlet sage, verbena, canna, dahlia, and sweet pea, should be sown inside about March 15 and may be sown outside from the 1st to the 15th of May. Scarlet sage and verbena seed should be sown inside about February 15 in order to get good plants for the flower bed.

For starting seeds indoors it is well to use a shallow box about 14 inches long and 10 inches wide and 2½ deep. Bore four or five holes in the bottom for drainage. Put about one inch of rough stuff in the box and fill in with an inch of fine soil. Sprinkle a little soil over this and firm the soil. Sow the seed broadcast and cover with finely sifted soil. Covering seeds is an important point, for if the seed is covered too deeply it will fail to come up, and if not covered deeply enough germination will not take place. A good rule is to cover seed twice their small diameter. Transplant when large enough and set in the flower beds any time after May 15. Asters and sweet peas may be set out in April.

Often on the home grounds there will be unsightly fences or

buildings. These may be hidden by some of the climbing plants, such as the Virginia creeper, clematis, trumpet creeper, and the rambler roses. Piazzas, verandas and posts are never so beautiful as when hidden by a rose bush or clematis in full bloom.

This is an age of improvement along all lines, and the movement should begin at home. With nature always ready to lend a helping hand there is no good reason why the property owner should not have beautiful surroundings at his home. The education of children should not be limited to work in the school room. This flower garden contest should enlist several thousand girls. Committees will do well to offer prizes for best kept lawns and give the boys a chance here, too.

M. F. AHEARN, *Floriculturist, K. S. A. C.*

The foregoing instructions were prepared at my request and are sent out to the boys and girls of Kansas in the hope that they may contribute not only to the success of this year's contests but that they may incite to greater interest in and love for the growing of both useful and beautiful plants in field and garden.

Address correspondence relating to any of the contests to

J. H. MILLER, Superintendent Farmers' Institutes.
Kansas State Agricultural College.
Manhattan, Kan.

The program for the Choral Union concert, to be given in the Auditorium on the evening of March 21, is as follows:

PART I

1. Overture.....Victor Herbert

ORCHESTRA

2. Havanaise.....Saent Saëns

HALFDAN JEBE

3. The Herb Forgetfulness.....von Fielitz

C. EDW. HUBACH

4. Invitation to the Dance.....von Weber

FLORENCE LATIMER

5. Elsa's Dream.....Wagner

FLORENCE SWEET

6. (a) Humoresque.....Dvorak
   (b) Spanish Dance.....Sarasate

HALFDAN JEBE

7. The Two Grenadiers.....Schumann

OLOF VALLEY

8. Thoughts of Long Ago.....von Fielitz

C. EDW. HUBACH

PART II

"The Swan and Skylark".....Goring Thomas

CHORAL UNION

Accompanied by the College Orchestra.

THE INDUSTRIALIST

Published weekly during the College year by the Printing Department of the

Kansas State Agricultural College

Manhattan, Kansas.

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PROF. J. D. WALTERS.....Local Editor
PROF. J. T. WILLARD.....Alumni Editor

Local Notes.

Winter term will close Friday, March 29.

A report of the annual interclass corn-judging contest, held on March 13, was crowded out of this issue, but will be published next week.

Chief engineer Wessling, of the Bullock Electric Company, Cincinnati, Ohio, addressed the engineers in Professor Eyer's class room on Tuesday morning.

Senior student Henry Brinkman, of the architecture course, has received official notice from Emporia, Kan., that the school board has selected his designs for the new Meynard school building. Over thirty competitive designs had been submitted by a dozen or more architects, and those of Brinkman were considered the handsomest and most modern of the lot. The building will cost about $25,000 when completed, and will be a very fine structure.

The prairie-dog of Western Kansas is not quite dead, though Professor Popenoe, who is in charge of the State poison laboratory, reports that there has been a great decrease in sales of poison the past three or four years, due to the thorough success that has followed the use of the College mixture. The total sales of prairie-dog poison for the last three years is 8831 quarts. In 1904 the College sold 4326 quarts; in 1905, 3871 quarts; in 1906, 634 quarts. The sales of gopher poison has been smaller but very constant, and orders came from all over the eastern half of the State. The total sales are 909 quarts, or in 1904, 371 quarts; in 1905, 160 quarts; and in 1906, 378 quarts.

The Printing Department has mailed this week bulletins 141, 142 and 143 of the Kansas State Agricultural College Experiment Station. Bulletin 141 treats the subjects of "Commercial Seeds of Brome-Grass, and of English and Kentucky Blue-grasses; Adulterants and Substitutes and their Detection." It is a neatly illustrated pamphlet of 46 pages and was prepared by Prof. H. F. Roberts and Assistant Geo. F. Freeman, of the Botany Department. Bulletin 142, prepared by Prof. Albert Dickens, of the Horticulture Department, treats of his experiments in "Oil Road Improvement" made the past two years at Manhattan, Hutchinson, and Garden City. Bulletin 143, prepared by Prof. Oscar Erf, of the Dairy Department, treats of the "Disposal of Dairy and Farm Sewage, and Water-Supply." It is illustrated with ten original drawings representing various new arrangements for drainage for farmers' homes and dairies. All of these bulletins may be had free of cost by addressing the College Experiment Station, at Manhattan, Kan.

Friday of last week President and Mrs. Nichols attended the thirtieth anniversary of the Philomathean-Alpha Literary Societies of their Alma Mater, the State Normal School of Iowa, located at Cedar Falls. The President, who graduated there twenty-five years ago, delivered the annual address.

Letters received from Prof. N. S. Mayo, formerly the head of the Veterinary Science Department of this College, and for about two years veterinary expert of the Republic of Cuba, say that he has accepted a similar position in Uruguay, South America, and that he and his family will leave for Montevideo in a few weeks. His work there will begin in June, the beginning of the winter on the southern hemisphere.

Alumni and Former Students.

Changes of address: J. F. Odle, '94, Wamego, Kan.; Victor L. Cory, '04, 502 N. Main St., McPherson, Kan.

Miss Eva Rigg, '02, of Fisk Deaconess Home, was ordained a deaconess by Bishop Wilson at the recent conference of the Methodist Episcopal Church.

Dr. Clay E. Coburn, '91, Kansas City, Kan., has been appointed a member of the State Board of Health. Doctor Coburn's place of residence will enable him to be of special service to the board, and he will doubtless meet the situation adequately.

John A. Kleinhans, student in 1886, has been appointed a food inspector for this State in accordance with the Kansas Pure Food Law, February 16, 1907. Mr. Kleinhans has had a large experience in the manufacture of foods and will make an excellent officer.

Flora Rose, '05, 30 West 59th St., New York City, is having a busy and happy year. Since Christmas she has been registered as a graduate student of Columbia University and hopes to get the Master's degree next winter. She is keeping house with her mother and brother and is very pleasantly situated, overlooking the park.

M. M. Hastings, '06, is taking a course in bacteriology at the University. He spent a few days at the College studying the data obtained in connection with the analyses of eggs produced during the egg-laying contest in 1905. Mr. Hastings had charge of the poultry at that time. He is now doing special work preparatory to devoting himself more especially to poultry problems.

Harvey C. Stiles, Corpus Christi, Tex., student in 1885, is horticultural manager for the St. Louis, Brownsville & Mexico railway. He sends a paper on "The Outlook for Citrus Fruits in Texas," recently read before the Texas Horticultural Society. He thinks that the prospect for such fruits is very flattering. Mr. Stiles produced last year the first Arabian dates ever matured in Texas. They were magnificent. They were artificially pollenated, his object being to prove that Texas is a date country.

THE INDUSTRIALIST

Vol. 33 No. 21

Issued Weekly By

Kansas State Agricultural College

Manhattan, Kansas

Published by

PRINTING DEPARTMENT

J. D. Rickman, Supt.

Entered at post-office, Manhattan, Kan., as second-class matter. Act of July 16, 1894.

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THE INDUSTRIALIST.

VOL. 33. MANHATTAN, KAN., MARCH 23, 1907. No. 21

County Fair Rules And Regulations.

As the time is at hand when county fair organizations should be getting out their premium lists for the fall fairs, a few suggestions regarding the rules and classifications would possibly not be out of place. Many counties in the State are holding very successful annual fairs, with classifications and premium lists that are thoroughly up to date, but there are other fairs which are merely existing, and when one is familiar with the loose and unbusiness-like methods in which they are conducted, it is surprising that they are able to exist at all.

Before publishing a catalogue or premium list, the board of directors should agree on a set of rules and regulations broad enough to cover all questions that are likely to arise during the fair. Such rules should be plainly written, leaving no chance whatever for a difference of opinion as to how they should be interpreted, and the management of the fair should see that these rules are enforced and observed to the letter. It would not be a bad plan to state on the cover page of the premium list that all rules and regulations will be enforced, and that no one need ask for any special privileges. Such a statement would, perhaps, save the secretary and superintendent much worry and bother.

Some associations advertise that they will furnish hay and bedding free of charge to all live-stock exhibitors. If it has been advertised that this will be done, the superintendents of the various live-stock departments should see to it that there is plenty of both hay and straw on hand at all times, and that the exhibitor has suitable stalls for exhibiting his stock, so that they may be comfortable, and at the same time be easily accessible for the inspection of those who attend the fair. Complaints are frequently heard from visitors that they are unable to see the stock owing to the fact that they are in crowded quarters or poorly lighted barns. These are things that the management of the fair should look into long before fair time, for those who attend the fair and pay their admission are entitled to every consideration that can be accorded them.

The date on which entries should close, especially in the live-stock department, should not be later than six o'clock in the evening of the opening day of the fair, and this rule should be strictly observed. I have known cases where the entries have not been closed until the second or possibly the third day of the fair, and the breeders living near the fair grounds have visited the fair on the first day, or perhaps the morning of the second day, and found some classes were not well filled, or possibly not filled at all, and have gone home and brought in stock and entered it in these classes that was a disgrace to the owner and to the fair association to have it on the grounds. They have also asked to have the judging delayed until they could get their stock in. Oftentimes such animals are entirely unworthy of a premium at all, and are simply brought to the fair because there is nothing else in that class and the owner thinks there is a chance to win a prize without competition.

This is also an injustice to the exhibitor who has gone to some pains to fix his stock up for exhibition, and who perhaps has moved it a considerable distance. This can be overcome by positively closing all entries by six o'clock on the opening day of the fair, and requiring that all animals that are intended to compete for prizes be on the grounds at that time; and they should by all means be required to remain on the grounds until the fair closes. In the horses classes, more especially in the light horse classes, there is a tendency to ascertain the time when such classes will be judged, and the owner simply drives his horse or team on the ground at that time and then takes them home again. Such entries as this are of no value to the fair or to the visitors, and they should never be permitted. All stock that are entered for competition should be required to remain on the grounds from the time the entries close until the fair is over, unless possibly in the case of a lack of suitable stall room stallions are allowed to be taken off of the grounds after six o'clock in the evening and returned by seven o'clock in the morning.

If, after an animal has been exhibited and possibly won a prize, it should be taken away and not returned, the fact should be reported by the superintendent of that department, and any prize money or premium that such an animal has won should be withheld from the owner.

The State is now pretty well stocked with pure-bred animals of all kinds, and certificates of registration should always be required at the time of making entry. The date upon which the ages of the various classes are to be based should be plainly printed

on the preliminary classification list. Very frequently animals are found entered in the wrong class, and this difficulty can be overcome if the date upon which ages are to be based has been published and the certificates of registration are required to be presented with the entry applications, and it will also eliminate any possibility of grade animals being entered in the pure-bred classes.

If the entries are positively closed at six o'clock on the opening day, and there should be no exception to this unless it be on account of the inclemency of the weather, it will give the secretary and superintendent of the respective departments time to make up their premium books so that everything will be in readiness when the time arrives for judging. Small premium books should be provided for each breed. At the time an exhibitor makes entry, he should be assigned a number, and this number takes the place of his name, and all entries he may make, no matter whether it be in the live-stock department or whether he is exhibiting in other departments, in whatever class he makes an entry this number should appear. Never give each entry that he makes a separate number, as it is not at all necessary, and oftentimes is very confusing.

Some associations have a rule that there must be two or three animals competing in any class before a premium will be awarded. This is not justice to an individual exhibitor who may have an animal that is very worthy; it is not his fault that the other entries are not present, and such a rule should be excluded from all associations. On the other hand, it is a good plan to have a rule that no unworthy animal or article where the classes are not well filled shall be awarded a premium.

A pen or roped enclosure should be provided in which the judging may take place, and every one except the superintendents, judges and the attendants of the stock should be excluded from this ring during the time the judging is taking place. It should be required that all cattle and horses that are exhibited must be thoroughly halter broke. The average sized pen which is provided for hogs is usually entirely too small for the judge to make a thorough inspection of the hog, and some place outside the shed, with convenient gates or openings, should be provided for judging hogs. If a shed is constructed with a double row of pens and an aisle through the center, whenever it is possible it is always more convenient to take the hogs out through the back side of the pen so that they will not interfere with the visitors who may be in the sheds at that time.

A rule cautioning the exhibitors never to interfere with the

judges, or have anything to say to them relative to their exhibits when they are being judged, should be included among the other rules. If a team is to be shown in harness, it should be definitely stated whether the harness is to be taken into consideration or not. This has often caused dissatisfaction when the award was made, as some exhibitors have spent considerable time in fitting up a good harness when it was not the intention that the harness should have anything to do with the award.

Around the hog and sheep pens especially, the management should provide for ample disinfecting.

Most county fairs provide for only two prizes. In localities where there is likely to be a large exhibit of stock, the same amount of money divided into three prizes will often prove more satisfactory and insure better filled classes than when it is given as two prizes. Each breed should have a classification of its own, and never require all draft horses to be shown in the same class, or all beef cattle to be shown in the same class, or all black hogs, or all red hogs, as is sometimes the case.

In all larger fairs the date for computing ages is the first day of September for cattle, and March the first for sheep and hogs, and if such dates were adopted by all county fairs it would often save many disputes and much dissatisfaction. The classification lists of the various breeds should contain enough classes to accommodate animals of all ages. In some associations we find a very limited classification, and in others a larger classification than is necessary. The following classification will usually be found ample for the average county fair.

For pure-bred horses, each breed should have the following classification:

Stallions four years old and over.
Stallions three years and under four.
Stallions two years and under three.
Stallions one year and under two.
Stallions under one year.

Mares four years and over.
Mares three years and under four.
Mares two years and under three.
Mares one year and under two.
Mares under one year.

This classification should be provided for all breeds, both light and draft horses, that are common in the county or locality that are likely to be represented at the fair. If there is to be a large

exhibit of horses, it is sometimes advisable to offer a prize for the best three or five head brought by one exhibitor, or for the best three or five colts the get of one stallion.

For cattle there should be classes for:

Bulls three years old and over.
Bulls two years old and under three.
Bulls one year and under two.
Bulls under one year.

Cows three years old and over.
Cows two years and under three.
Cows one year and under two.
Cows under one year.

A herd of five head consists of a bull and four females. This can usually be made for any age, or a classification for an aged and a young herd may be provided. There should also be a class for two animals, the produce of one cow, and for three or four animals, the get of one sire. This classification will answer for both beef and dairy breeds, but each breed should have its separate class.

In the hog department each breed should have a classification with classes for:

Boars two years old and over.
Boars one year and under two.
Boars six months and under one year.
Boars under six months.

Sows two years old and over.
Sows one year and under two.
Sows six months and under one year.
Sows under six months.

An aged herd should consist of a boar and three sows over one year, and a young herd of a boar and three sows under one year. There should always be a class for the best litter of five pigs, and for the best five pigs sired by the one boar.

In counties where sheep are to be exhibited, each breed should also have its own classification, which should run:

Ram two years old and over.
Ram one year and under two.
Ram under one year.

Ewe two years old and over.
Ewe one year and under two.
Ewe under one year.
Pen of five lambs and flock to consist of ram and three ewes.

One of the most common errors found in the average classification list is the requirement that entries must be made before animals are eligible to compete in the championship classes. Such entries are not at all necessary, and are never required in the larger shows. The first prize animal in each of the respective classes, that is, the first prize stallion of any class, should compete for the championship of the breed. The same with the mare classes, cattle, and hogs, and if it is desired a senior and a junior championship may be provided for. In such a case all animals over two years old would compete for the senior championship, and all under two for the junior.

It is seldom if ever advisable to have a sweepstakes class between the different breeds, as it is usually hard to get a judge who is not more or less partial to some breed, and no matter what his decision might be, it is more often unsatisfactory than otherwise. The superintendent of each class should make a note in his premium book of the winner of each class, and when the individual classes have been judged he should call out the first prize winners of each class to compete for the championship of the breed, and the exhibitor should never be required to make entries for this class.

The amount of money offered as prizes in the respective classes must be determined by the association, and it will depend largely upon their resources as to how large the prizes can be made.

R. J. KINZER.

Interclass Corn-judging Contest.

The annual interclass corn-judging contest was held Wednesday, March 13, in the judging room of Agricultural Hall. Three teams entered. The second-term short-course team made a total score of 4109 points, winning the Fielding trophy cup for their class. The junior class team scored 4022, and the senior class team 3910. The second-term short-course team men were J. B. Campbell, J. R. Knappenberger, E. R. Miller, W. R. Linton, and C. V. Broberg. The juniors were represented by R. W. Hull, W. C. Anderson, H. A. Praeger, D. K. Morris, and O. M. Kiser. The seniors were H. A. Ireland, C. J. Gore, E. W. Cudney, B. C. Copeland, and Carl Miller. The Fielding trophy cup, valued at $100, is to be held by the class whose team proves the best judges, and the names of the individuals of the winning team are to be inscribed on the cup. This cup is presented to the College for competition each year by the Geo. T. Fielding & Sons, seed merchants of Manhattan.

The individual corn-judging contest, in which twenty contestants were entered, making a keen competition, resulted as follows:

1. W. C. Anderson..... score 896 gold medal.
2. J. E. Brock..... score 872, silver medal.
3. J. B. Campbell..... score 868, bronze medal.
4. R. W. Hull..... score 859, cash prize.
5. J. R. Knappenberger.... score 833, place.
6. C. J. Gore..... score 823, mention.

The medals for the winners of the individual judging contest are presented by the following gentlemen: Mr. J. T. Martin, Hanover, Kan., president of Kansas Corn Breeders' Association, breeder of Hildreth corn. Mr. W. S. McAuley, Americus, Kan., breeder of McAuley white corn. Mr. E. W. Young, Lawrence, Kan., breeder of Silvermine white corn. Mr. J. G. Haney, Deming Range, Oswego, Kan. Mr. T. I. Furst, Peabody, Kan.

Original Design for a Residence.

In the fall term of the senior year each student of the architecture course is required to prepare a complete set of original drawings, with general specifications, for a modern residence. The work is done under the direction of the professor of architecture, but the student is expected to make a high-grade original composition of it as far as the arrangement of the rooms and the exterior is concerned. The above is a photo-zinc etching of the front elevation of an original residence plan by student L. L. Dougan. The character of this building is the "Mexican" or "Spanish," a style now coming into use all over the Southwest. The exterior is finished in cement plaster on metal plaster lath, a finish that gives the architect great freedom of displaying his taste and originality.

THE INDUSTRIALIST

Published weekly during the College year by the Printing Department of the

Kansas State Agricultural College

Manhattan, Kansas.

PRES. E. R. NICHOLS.....Editor-in-Chief
PROF. J. D. WALTERS.....Local Editor
PROF. J. T. WILLARD.....Alumni Editor

Local Notes.

The Architectural Club had its picture taken.

Prof. B. R. Ward's classes in English will occupy the dairy class room next term.

The programs for the Choral Union concert, March 21, were beauties and a credit to the Printing Department.

Spring term begins Tuesday, April 2. The examination for admission will be held at nine A. M. on Monday, April 1.

The subfreshmen held their winter-term party in Kedzie Hall last Monday. They had a "high old time." The building certainly looked like it the next morning.

Prof. E. B. McCormick has enjoyed a visit from his father, Prof. Henry McCormick, of Normal, Ill., who spent a week with his sons at Manhattan, returning home on Friday of last week.

At a meeting of the *Students' Herald* stockholders last week H. A. Praeger was reëlected business manager; O. O. Morrison was made subscription manager, and Clif Stratton was elected local editor.

The assignment committee is busy making the assignments for spring term. All assignments will be completed before the beginning of the term, so that the class work can begin promptly on the first day.

The Animal Husbandry Department is getting some very interesting experiments in cross-breeding hogs. The sows of the following breeds are being crossed with Hampshire: Duroc-Jersey, Poland-China, Berkshire, Tamworth, and Yorkshire.

Assistant Theodore Scheffer is working on the manuscript for a bulletin on the "Pocket-gopher, his Life History and Habits, and the Methods of Exterminating Him." The bulletin will embody the results of Mr. Scheffer's investigations covering a period of several years.

Fred Dial, '97, who has been doing special work in taxidermy for the Department of Zoölogy, has nearly completed the mounting of about thirty-five Kansas specimens of birds and mammals that were collected the past two years. They will be placed in the museum cases as soon as properly labeled.

The Hamilton special Friday night of last week was given to a full house, in the Auditorium, and was one of the hits of the season. The minstrel part of the program was especially well rendered. It was original, witty, and at the same time nearly free from objectionable "gags" and personal insinuations.

Prof. J. D. Walters has been invited to address the teachers of Kansas City, Kan., on "The Growth of Manual Training in the Public School."

The basket-ball season closed Monday night with the junior-sophomore game. The sophomore boys outclassed the juniors and won by a score of 34 to 14.

A party of six ladies came down from Blue Rapids last Thursday to visit Assistant Librarian Gertrude Barnes and attend the Choral Union concert.

Supt. J. E. Edgerton, of the city schools, had charge of Professor McKeever's classes Saturday of last week, the Professor having been called to Lyons, Rice county, to address a teachers' meeting.

Director Burkett, of the Experiment Station, has transferred his office to the southeast rooms of the main floor of Anderson Hall. The office formerly occupied by Professor McKeever has been repapered and the class room is being divided into two parts.

Prof. O. Erf and Director Burkett are out this week on a lecturing tour over the Missouri Pacific railroad. The train will stop at seventeen towns in Kansas and will be out two weeks. They will demonstrate their lectures by means of a working dairy, including a milking machine.

Jack is dead! He died last week and has gone to the happy grazing grounds in the north paddock where good mules are being buried when they have completed their life work. The Agronomy Department has bought "Cap," the star mule of the Horticultural barn.

At a recent meeting of the Kansas Intercollegiate Track Athletic Association, held at Emporia, the following officers were elected for the ensuing year: President, Mr. Dean, of this College; vice-president, Mr. Quigley, of St. Marys; secretary and treasurer, Mr. Stahl, of Washburn, Topeka.

Miss Clara Willis, assistant in the Domestic Science Department, will take her vacation during the spring term and will return to College on Commencement to teach the College summer school of domestic science. She will go back to her home in Massachusetts at the close of this term.

The Y. M. C. A. election resulted in the selection of the following officers for the ensuing year: President, Jack Taft; vice-president, Arthur Ostlund; second vice-president, George Seaman; secretary, Ralph Hull; treasurer, Sol. Cunningham; student member of advisory board, Bert Smith.

Professor Roberts says his Esperanto class is making great progress, and are very enthusiastic. There are about ten in the class. An Esperanto program was given for the benefit of the library association Monday evening. Professor Valley sang a solo in Esperanto, the Cueer Cuartet sang the Spring song in Esperanto, and Professor Roberts gave a reading in Esperanto.—*Herald.*

The Board of Regents will hold its regular spring session beginning on April 3.

"Tomi" Miyawaki received a letter from his Japanese lady last week which measured eight feet and was written on both sides.—*Herald.*

The Animal Husbandry Department has presented the President's office with a rug made from the hide of the prize shorthorn steer "Tim," which was slaughtered last December.

The pump in the pumping station has filled up with quicksand to such an extent that it has refused to work. The College is forced to use city water till the plant can be put in better shape.

Pres. E. R. Nichols went to Topeka last Monday afternoon to consult State Architect Stanton with regard to the new College buildings, for which appropriations were made by the last legislature.

Engineer Lund and Professor Eyer went to Junction City Monday and Tuesday of this week to examine the street railway and power plant there. This is the first time Mr. Lund has been away from College since the World's Fair.—*Herald.*

The Agronomy Department is making extensive tests of the germinating qualities of seed-corn. Nearly 9000 ears, measuring about ninety bushels, have been tested this spring. The work of testing was done by F. L. Williams and H. I. Bowers.

Prof. Fredric A. Metcalf, formerly the head of the Department of Public Speaking at this College, visited the institution last Thursday. He came to Manhattan from Hanover, Washington county, where he had given a series of public readings.

Librarian Margaret Minis is making preparations to add seven additional steel book stacks to the equipment of her department. The new stacks will be two stories high and uniform with those already in place. The legislative appropriation made for this purpose is $4000.

Professor Popenoe went to Kansas City, Kan., last week to investigate a number of orchards for the San Jose scale. He found 400 peach trees in one orchard about two and one-half miles from the city, on the Leavenworth trolley road, badly infested. He expects to devote a good part of the spring term to similar investigations.

Our Agricultural College, from the standpoint of material interest, is by far the most important educational institution in the State. It represents those industries which must for all time be the foundation of the State's prosperity. It is of far greater importance to the human race and to the people of Kansas that its citizens have an intimate knowledge of the roots of plants and the causes which contribute to their thrift or decay than for them to have a knowledge of the roots of words derived from languages long since dead."—*President Hanna, of the Improved Stock-Breeders' Association.*

The Animal Husbandry Department has commenced the rebuilding of the east wing of the old stone barn to fit it up for work in digestion experiments with hogs, cattle, and sheep.

Professor Kinzer last week bought a fine Percheron team of mares of O. L. Thistler, of Chapman, and a two-year-old pure-bred Angus steer of H. S. Kellerman. The steer will be a star in the College show herd.

The Domestic Art Department will arrange for another annual exhibit of its class work, on the second floor of Kedzie Hall, on Wednesday, March 27. The exhibit will be open from 10 A. M. to 5 P. M., and everybody is cordially invited to visit the rooms and feast their eyes on the beautiful hand work of the students of the department. Supt. Antonetta Becker says that it will be the best and richest exhibit of the kind ever shown by the College.

As the term draws to a close the "local" wishes to say publicly to the second-term girls of the domestic science short course that the members of the Faculty have greatly enjoyed the regular dinners served by the training class in cooking. The menus were varied, piquant, and well served. Each girl had to cook and serve for a party of four teachers a full week, buy the groceries and keep an expense account. The result was very gratifying to both sides of the house. It would be difficult to find a group of more accomplished and handsome young housekeepers than the class who prepared these meals.

Arrangements have been made for the excavation of a large pond in the valley directly southwest of Kedzie Hall. The excavating will be done by the Agronomy Department at such times as the College teams are not otherwise at work. When completed the pond will cover about seven acres and will be an ornamental feature of that part of the campus. It is estimated that an excavation and dam that will produce a lake of this surface and of a depth of nine feet will require the removal of nearly 5000 cubic yards of earth and will hold over two and one-half million cubic feet of water. The pond will be built to catch the surface water of the valley during the spring and summer, and thus protect the southeast part of the College farm and north part of the city from floods.

The shorthorn sale in the College sales pavilion, March 21, by the well-known breeders T. K. Tomson and Sons, of Dover, Kan., was very successful. About forty head were sold at an average price of $158. Most of the cattle were bought by Kansas breeders. Among the prominent breeders who attended the sale we noticed T. P. Babst, of Auburn, Kan., N. F. Shaw, of Plainsville, Kan., William Wales, of Osborne, Kan., I. A. Gifford, of Beloit, Kan., Chris. Wilson, of Glasco, Kan., C. F. Nevins, of Childs, Kan., H. M. Hill, of La Fonta, Kan., C. M. Garver, of Abilene, Kan., G. F. Taylor, of Abilene, Kan., Walter Mitchell, of Allen county, Kan., and C. Cook, of Beloit, Kan. The sale was conducted by Col. Geo. Bellows, of Marysville, Mo., and Col. L. R. Brady, of Manhattan. The College sold a shorthorn calf, eight months old, for $137.

Last fall when Doctor Blachly, of Manhattan, left for Florida he presented the College with his collection of Kansas birds, consisting of over one hundred mounted species. These birds had been collected and mounted by the doctor in his leisure hours during many years. Assistant Theodore Scheffer has now installed the collection in the museum. Since the doctor's departure he has also sent about twenty-five rare bird skins from Florida. Some of these will be mounted by the Department of Zoölogy and placed in the ornithological cases.

The third annual Choral Union concert was given in the College Auditorium last Thursday evening to a fair-sized audience. Every selection was well rendered. Mr. Halfdan Jebe, of Topeka, violinist, and Mr. C. E. Hubach, of Lawrence, tenor, were the "outside attractions," and they will be assured of a hearty welcome if we are so fortunate as to have them at any time in the future. Professor Valley, basso, and Miss Latimer, pianist, were each recalled for an encore. In the second part of the program the "Swan and Skylark" was rendered, in which the following soloists took part: Misses Gertrude Eakin and Florence Sweet, sopranos, Miss Geneva Henderson, contralto, Mr. H. E. Porter, bass, and Mr. J. R. Garver, baritone. The Choral Union of over 120 voices pleased everybody, and there was general regret that more time could not be given to this part of the exercises.

Alumni and Former Students.

A. D. Colliver, '05, was recently called to California by the death of his father.

Adelaide Strite, '01, was granted an instructor's certificate at the recent meeting of the State Board of Education.

Among the out-of-town graduates who attended the Choral Union concert were Carl Thompson, '04, F. L. Courter and C. H. White, '05, and G. E. Yerkes, '06.

John Frost, '92, Blue Rapids, Kan., is prospering at general farming, especially in feeding cattle and hogs. He also rejoices in a fine family, consisting of his wife, two boys, and three girls.

A very quiet wedding was solemnized last Thursday evening at the home of Mr. and Mrs. J. J. Paddock, on Leavenworth street, when their daughter, Miss Kate, became the bride of Henry P. Hess. Rev. O. B. Thurston officiated, using the ring service. No guests were present, the only witnesses being the immediate relatives of the bride. Both Mr. and Mrs. Hess are graduates of the Agricultural College, she completing her course in 1900 and he in 1905. They are very estimable young people and have a great many friends who wish them well. The young couple left Friday evening for a few days' visit in Kansas City. They will make their home in Manhattan, Mr. Hess, who is in the employ of the Western Electric Company, being able to make his headquarters here, having taken a position as traveling representative for the firm. His territory will cover Kansas and Missouri.—*Mercury.*

J. V. Patten, '95, made a flying trip to the College recently. He is secretary-treasurer and a stockholder in the Chas. W. Smith Manufacturing Company, of Chicago, Ill. They manufacture a combination furnace and hot-water heater.

Changes of address: Nathan E. Lewis, '88, 1003 High street, Youngstown, O.; C. J. Axtell, '04, General Delivery, Schenectady, N. Y.; O. M. McAninch, '02, Weskan, Kan.; Earl J. Evans, '06, ElPaso Sash and Door Factory, ElPaso, Texas; Christine (Hofer) Johnson, '02, 26 Prospect Place, Belleville, N. J.

Ella S. Child, '77, was married Tuesday, March 19, at 10:00 A. M., to Mr. J. C. Carroll, in the presence of relatives and a few friends. The ceremony was performed by Rev. O. B. Thurston, and was simple and informal. It was introduced by Adelle (Blachly) Freeman, '01, who sang "Because," by Guy d' Hardelot. During the congratulations after the ceremony she sang "I Love You Truly," by Carrie Jacobs-Bond. The bride wore orange leaves sent her from Florida by Mrs. C. P. Blachly and the parlors were tastefully decorated by potted plants and white and red carnations. Mr. and Mrs. Carroll left on the afternoon train for their home on a small farm near Topeka. Their address is Station B, Topeka, Kan. Miss Child will be very much missed in church work, in which she has always been active, as well as by her friends, whose best wishes for the future accompany her to her new home.

This office is in receipt of a letter from Frederick E. Rader ['95], superintendent of the Alaska Experiment Station at Rampart, Alaska, under date of January 7. As an item of news no doubt of interest to many of Mr. and Mrs. Rader's friends here, he states that a daughter, their first-born, was born to them on December 26, in Los Angeles, Cal. In referring to the weather, Mr. Rader concludes his letter with the following about weather conditions: So far we have had quite a pleasant winter. Fifty below zero has been the coldest. That would seem pretty cold in Kansas, but we do not mind it here. I am living in a new one-story frame house 28x30, and it is kept comfortably warm with only one ordinary sized wood heating-stove when the temperature outside is between 45° and 50° below. There is also a cellar under the house in which the temperature has not been below freezing, and it is not artificially heated either. There are many wonderful and peculiar things about this country which Kansas people would not believe, but I will not lay myself open to suspicion by recounting any more of them."—*Nationalist.*

ANNOUNCEMENT.

The third annual reunion and banquet of the K. S. A. C. alumni and former students living in Chicago and vicinity will be held Friday evening, April 5, 1907, at the Hamilton Club, corner Clark and Monroe streets, Chicago, Ill. All persons interested who have not received a previous notice and who desire to attend are requested to communicate with the president of the local association, Mr. J. V. Patten, Room 202, 40 Dearborn street, Chicago, Ill.

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Manhattan, -- Kansas

THE

INDUSTRIALIST

Vol. 33 No. 22

Issued Weekly By

Kansas State Agricultural College

Manhattan, Kansas

The Seed and the Seed-bed

Published by

PRINTING DEPARTMENT

J. D. Rickman, Supt.

Entered at post-office, Manhattan, Kan., as second-class matter. Act of July 16, 1894.

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THE INDUSTRIALIST.

VOL. 33. MANHATTAN, KAN., MARCH 30, 1907. No. 22

The Seed and the Seed-Bed.

Delivered before Corn Growers' Association of Missouri, at Columbia, January 10, 1907, by Prof. A. M. TenEyck.

Mr. Chairman and Farmers of Missouri: You have a long program, and I do not want to lengthen the talk on this subject above what will be necessary in order to present a few of the important principles on the subject of "The Seed and The Seed-Bed."

WELL-BRED SEED.

Good seed is the first requisite in producing large yields of crops of any kind, and when I speak of good seed I mean more than simply seed which will sprout and grow—I mean seed of a variety adapted for growing in a certain soil and climate—I mean pure-bred seed, or at least well-bred seed of that variety, and this is hard to find. We have the term, "pure-bred" corn; but any of you who have grown it know it is not pure-bred. In my judgment, it will take a long time yet to make pure-bred corn, and then the breeders will always have to fight to keep it pure bred.

And this is true of other crops raised on the farm—that they are all badly mixed. Take wheat, for instance. Kansas is one of the great wheat-producing States in the Union, and yet I find in traveling over the State and observing the samples of grain exhibited and delivered at the elevators that we have practically no pure-bred wheat. It is all mixed. I have never discovered a sample of pure-bred wheat. There is some well-bred wheat, and some farmers are doing careful work in grading their seed-wheat and keeping their seed grain as pure as possible; but there is no pure-bred seed to start with. That is the difficulty.

We find in the comparative tests of varieties of corn, wheat, oats, and other farm crops at the Kansas Experiment Station, that there is a great difference in the yield and in the quality of the grains produced by different varieties.

In 1904 some thirty varieties of winter wheat were grown in small plots side by side. The soil was practically the same. All grain was sown on the same day, at the same rate of seeding, and the crops given exactly the same culture and treatment, and yet

the yields of grain from those plots varied from nineteen to thirty-seven bushels per acre. The experiment was repeated in 1905 on a little better piece of land. Perhaps, too, it was a little better year for wheat. The yields varied from thirty-one to forty-seven and a half bushels per acre, and the difference in grade and quality of the grain was as great as the difference in the yield. Some of the inferior producing varieties were discarded and the test repeated again in 1906, the resulting yields ranging from thirty-nine to fifty-one bushels per acre. A few of these varieties have proven superior to others and much better adapted for growing in our soil and climate. I will name several of these: Kharkof, Malakoff, Red Turkey, Bearded Fife, Red Winter, Defiance, Zimmerman, and Fultz. These include only two different types of wheat. The first six varieties named are the hard red winter wheat; the last two are the soft red wheat. Certain types or varieties of wheat are adapted for growing in certain sections of the State. In Eastern Kansas, especially on the bottom-lands, the soft red wheat grows well, while in Central and Western Kansas the hard red wheat is most successfully grown. Variety testing must be more or less local in order to determine which are the best varieties to grow. Yet the general tests made at Manhattan indicate what varieties may be best adapted to certain localities. Much of the same work is being done with corn and other crops, with similar results.

In our tests with oats three varieties out of some thirty tested have given decidedly the larger yields. These are, Sixty day, Kherson, and Red Texas, and these varieties of oats are also proving to be good producers in other parts of the State. Out of some eighty different varieties of corn tested during the last four years, eight or ten varieties may be selected which are decidedly better than the average and which have given larger yields, with a better quality of grain than the other seventy varieties. There is no question but that there is a great difference in varieties in their adaptation to different soils and climates, and it should be the purpose of the State Experiment Stations, with the help of the farmers and the substations, to determine what are the best producing varieties for the State and for different sections of the State.

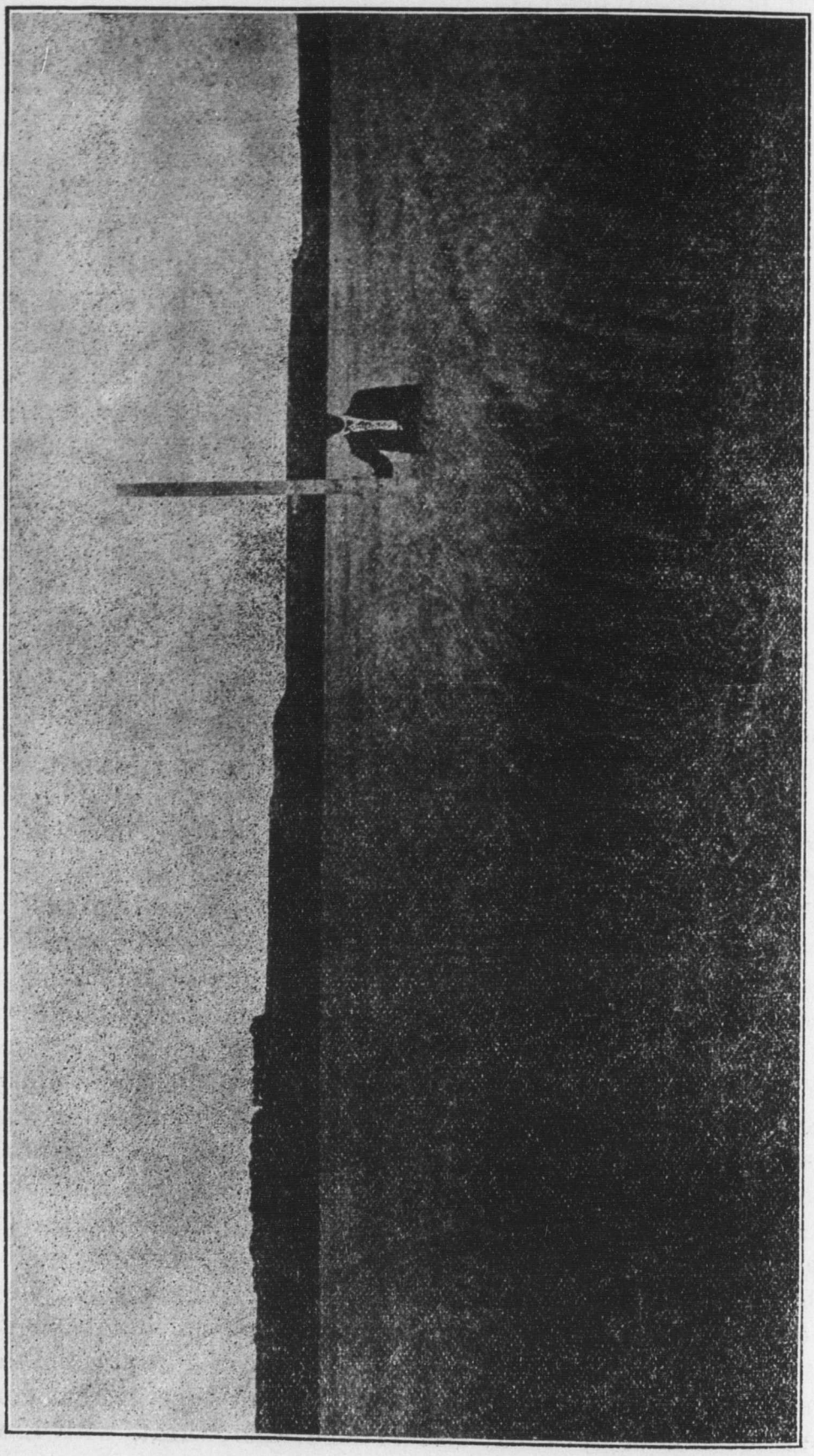
A great deal of this work of variety testing has been done in several states, but usually with very little results. I found on studying up this question recently that while some states had tested a great number of varieties of standard crops through a long period of years, some times as long as ten years, and had finally made a report showing that certain varieties were the best

producers, that to-day those varieties were not grown at all in that state. The tests had been made and the seed simply thrown away. Such work has very little value. Just to know that a certain variety is better than another does not help the farmer unless he can get the seed of that variety and plant and grow it. You want some of the seed of that best-producing type of corn, wheat, oats, or barley, and it has been my plan at the Kansas Station not only to test varieties, but as soon as I am satisfied that some varieties are better than others, the seed is planted in increased plots, multiplied in quantity, and distributed to the farmers of Kansas at a nominal price.

Professor Burkett, director of the Kansas Experiment Station, remarked in a recent address that if a pure-bred hog sold for two or three thousand dollars and was worth it, and breeders were willing to pay that price, that a bushel of pure-bred wheat, which had been carefully selected through generations previous to the production of this bushel, was worth in comparison to the ordinary wheat just as much as the fancy bred hog was worth in comparison to the ordinary hog.

There is no question but that as we get these varieties separated, as we get them pure in type, we have something better than the average—something that is far better than the farmers of the State are growing. The distribution of better seed in Kansas has already given good results, and many compliments have been received from the farmers regarding the greater productiveness of seed grain sent out from the Station.

Thus the work of the Experiment Station is not only to test varieties, but to breed crops, increase the seed and get it out among the farmers of the State. In the last two years the Agronomy Department of the Kansas Station has sold and distributed some 1500 bushels of good seed-wheat, several hundred bushels of good seed-oats and barley, and five or six hundred bushels of seed-corn of good varieties—not pure bred, but better than the average. Meanwhile we are attempting to still further improve these better varieties by breeding and selection. I will not go into the details of the work along that line. You will have in this meeting the subject of corn breeding presented to you and the "ear-row" method of breeding will be discussed, by which the breeder is able to secure a purer type of corn by selecting the individual ear and making it the foundation of the new and improved strain, and thus increase the yield and improve the quality and type of that corn. The same kind of work may also be done with wheat, with Kafir-



A field of hard, red, winter wheat, grown on the Experiment Station farm in 1906; average yield, 58.3 bushels per acre.

corn, with sorghum, with oats and barley, and almost every crop the farmer grows.

At the Kansas Station we are breeding several of these crops by the "head-row" method. The best heads of wheat are selected in the field—heads that are alike and pure in type. Each head is shelled separately, and only the grain of the better type and quality is saved for planting. By this method of selecting like heads of apparently the best type and planting this seed in separate rows we hope to be able to select the individuals which will be the founders of a purer, higher producing strain of wheat and better adapted to our soil and climate than the average wheat from which the selections were made. You see there is a great field in this plant-breeding work, which we are only just touching in the subject of corn. It is wonderful and a very interesting field of work, and I believe we are going to do more for agriculture in this line of crop breeding in the next twenty years than we can imagine right now. There is a great opportunity to breed better seed by improving the best varieties we already have, by breeding pure strains, or new varieties as we may call them, though practically they are just strains of the sorts we are growing to-day. I will not go into further detail on this subject of crop breeding, because it will be further discussed in talks following this.

VITALITY OF SEED.

It is just as necessary that the seed which we plant be not only well bred but strong in vitality. The seed which is nicest in appearance may not necessarily be the strongest in vitality. We have found with corn that it is not always possible to judge an ear as to its vitality. A good judge may make a fair guess. He would discard ears which contained molded, decayed or immature kernels. He would suspect the vitality of certain ears of corn if the kernels had broken tips or a dull color, and sometimes he would be correct. But at the Kansas Station I have picked out from a crop of twenty acres of corn fifty of the best ears the eye could select and tested them separately as to germination and found that the kernels would not all germinate. There seems to be in an ear of corn an inherent quality which has something to do with its vitality and its reproductiveness, and the only safe way to determine whether corn is good seed-corn or not is to test the germination of the kernels of every ear before planting. That looks like an awful big job to Kansas farmers, and I am almost afraid to present it to them yet, and I want to get them started by persuading them to test simply the ears they intend to use in their seed plants. But when we find that in one hundred ears of well-

selected seed-corn a half-dozen or more ears may be discovered by the germination test whose kernels will not sprout, it is evident that each individual ear should be tested and proven good before planting in order to secure a perfect stand. This is one of the ways of getting a large crop—to have a perfect stand.

With other kinds of grain, I have not made experiments to test this matter of germination so far as the individual plant is concerned. But with all kinds of grain, it is safer to make a general test of the germination before planting. This is not so necessary with wheat, oats, and barley, but especially important with the smaller seeds, clover, alfalfa, and grass seeds. It is a great risk to plant grass seeds without first testing the germination. A simple germinator may be used for this purpose: a shallow box, three or four feet long by two or three feet wide, about two inches deep, filled full of sand or soil, makes a good germinator. Count out a hundred or perhaps a thousand seed and scatter them over the sand. Press the seed lightly into the sand or soil, water thoroughly, and cover with a wet cloth or folds of wet paper, and protect this with a light cover of boards to prevent evaporation. Place the germinator in a warm room. It may be advisable to water again in two or three days. After five or six days, with most seeds, the vital seed will have germinated and may be counted and the percentage of germination determined. The same germinator answers very well for testing individual ears of corn, provided small wires are stretched across the box, laying the surface off in squares of about two inches, which may be systematically numbered. The importance of good seed can hardly be overestimated.

THE SOIL.

The breeding of crops is a part of our agriculture which, up to this time, has been largely neglected. Crop breeding is new, and we are interested in breeding corn, in breeding wheat, and in breeding all the standard crops. But there are other factors which are as important, or even more important, in the production of any crop as good seed. You may plant good seed of the purest varieties in an infertile soil and you will get a poor crop. You may plant the very best seed in fertile soil, which is in poor physical condition, or neglect to give the proper culture during the growing season, and you cannot produce the best corn, the best wheat, or the best oats. It is even more important in my judgment to make the proper conditions in the soil for growing the crop when we plant well-bred seed than when we plant any old scrub stuff. It is the same way with crops as with

stock. Any thing is good enough for the scrub animal. He does not need much care. He will hustle around over the prairie or live in a straw-stack all winter, and it does not make much difference if he dies. But we cannot afford to neglect well-bred stock, and we do not. We give it the best kind of care, with good feed, and we make the animals larger and better by feeding them properly and giving them the right care. The blood is, of course, an important factor. It is the beginning; but the "blood" must be given the proper conditions in order to have the animals develop properly; and it is the same way with good seed. It must be given even better conditions to make and keep it what it is than are required to prevent further deterioration of the scrub seed. Often the scrub seed cannot deteriorate much any way. It's already as poor as it can get.

When a farmer becomes interested in pure-bred corn and plants it, he grows better corn and larger crops. If a farmer plants well-bred corn he takes care of it and gives it a chance to make a good crop. He is more likely to give the well-bred corn the proper cultivation, and it is necessary to secure the best possible conditions in the soil and to give the best possible cultivation in order to produce again the kind of corn that the well-bred seed came from. Nature never made an ear of corn such as we have to-day. I have never seen the native corn plant, and I do not know that I would know it if I saw it. I understand it grows down in Mexico on the plateaus. The wild corn has only a few kernels on the ear. We would hardly recognize it as an ear of corn. The present corn has been produced by giving it better conditions to grow in than the wild plant has. We have in corn to-day an artificial product which has been made under conditions which are co-relative with nature, but which are not entirely natural; and any crop will deteriorate if left entirely dependent on nature, without the help of man. Then if we would improve our crops or keep them up to a high grade of perfection, we must have fertile soil and practice the best methods of culture.

There is no question but that plant food must again be added to the soil after it has been farmed a long time and the crops have taken out a large part of the fertility of the land. But I am not much of an advocate of the use of chemical fertilizers. I believe before we spend very much money for chemical fertilizers we ought to utilize the natural means God has given us to maintain the fertility of the soil. Those means are good tillage, rotation of crops, and returning to the soil the by-products of the farm. The last is accomplished by feeding the crops on the farm, thus

securing the manure, putting that back on the land, and in this way economically maintaining the fertility of the soil by these natural methods.

THE SEED-BED.

When viable seed is planted in the soil a few simple factors largely determine the strength of germination, the stand and yield of the crop, and the quality of the grain produced. These factors are moisture, heat, and air. Every farmer knows that a dry seed will not germinate; no matter how favorable other conditions may be, before the processes are begun which start or renew life and produce growth, the seed must absorb moisture. Again, every seed requires a favorable degree of heat before it will germinate, and the presence of air is necessary in order to supply the "life-giving" oxygen. A seed placed in a vacuum with the proper degree of heat and moisture will not germinate, and the same results often occur when seeds are placed in a very wet or water-logged soil, because the air is largely excluded from a soil in such condition.

In order to secure the ideal conditions for seed germination and plant growth a seed-bed for planting all kinds of small seeds should not be too deep and mellow; rather the soil should be mellow, but finely pulverized, only about as deep as the seed is planted. Below the depth at which the seed is planted the soil should be firm (not to compact), making a good connection with the subsoil, so that the subsoil water may be drawn up into the surface soil. The firm soil below the seed, well connected with the subsoil, supplies moisture to the seed, while the mellow soil above the seed allows a sufficient circulation of air to supply oxygen, and favors the warming of the soil, gathering the heat of the sunshine during the day and acting as a blanket to conserve the soil heat, thus maintaining a more uniform temperature in the soil during the night. Meanwhile, also, the mellow soil conserves the soil moisture, acting as a mulch to keep the water from reaching the surface, where it would be rapidly lost by evaporation; and the same condition favors the growth of the young shoot upward into the air and sunshine, where, in the presence of oxygen, light, and a favorable degree of heat, the green leaves quickly begin the work of assimilation, and the soluble plant-food elements absorbed by the roots are rapidly transformed into protoplasm, starch, and the various tissues which build up plant structure, and the young plant grows and is soon firmly established upon its own roots.

With a deep, loose seed-bed the conditions are less favorable for seed germination than in the "ideal" seed-bed described. The

mellow soil may be warm enough and well aerated, perhaps too well aerated, causing the soil to dry out, but with the deep mellow seed-bed the moisture in the subsoil is not available for the use of the germinating seeds, because the capillary rise of the water is checked at the bottom of the mellow soil. Such a seed-bed is almost wholly dependent upon rain for sufficient moisture to germinate the seed and start the young plants, and even if such favorable weather conditions prevail at seeding time, so that seeds may germinate and the crop start, yet at almost any time during the growing season, if drouth prevails, the crop growing in the deep, loose seed-bed is more apt to be injured because of the rapid drying out of the surface soil. In such a seed-bed the crop is not only apt to "burn out" in summer, but it is also more apt to "freeze out" in winter than a crop grown in the "ideal" seed-bed described above.

I cannot here go into detailed discussion as to methods of preparing a suitable seed-bed. An excellent seed-bed for small grains or grasses may be prepared without plowing when these crops follow corn or other cultivated crops, simply by disking and harrowing.

When the plowing precedes the sowing by a short interval it is well to follow the plow with the subsurface packer and harrow in order to pulverize and pack the soil at the bottom of the furrow and leave a mellow surface. This packing and pulverizing of the furrow slice is especially necessary when the soil is plowed dry or when stubble, trash or manure are plowed under, because if the furrow slice is left loose and unpulverized the capillary connection of the soil with the subsoil is largely broken off and the soil water will not rise into the surface soil to supply the germinating seeds and feed the roots of the young plants, hence the seed fails to germinate well, the stand is often poor, and in such a seed-bed the crop may "freeze out" during the winter or "burn out" during drouth in summer.

The general experience of farmers and the results of experiments are much in favor of early plowing for fall wheat. And it is preferable, as a rule, to plow in the fall for spring seeding of grasses and early grain crops.

Question.—What is the best way, in your opinion, to get that pulverized condition of the soil next to the subsoil?

Answer.—In wheat culture, we have three different methods in Kansas. One of the most common and most practical is to plow early; that is, as soon after harvest as possible. That gives a long

interval in which the soil can store the water. But this is helped out a little by harrowing, perhaps, right after plowing, and then every two weeks or ten days, or if it rains hard the harrow goes over it. Always ride the harrow. That is a lazy way to do, but it helps to settle the soil and loosens the surface deeper so that the soil may take in the rain and is less apt to wash or blow than shallow harrowed land.

Q.—Is not disking before plowing very beneficial?

A.—Yes, that is helpful. That brings up the second method of disking soon after harvest, and perhaps repeating the disking once or twice and then plowing. By disking the soil is kept in ideal condition to take in the water.

Q.—You seem to recognize the idea that it is advisable to disk before plowing. I would like to ask the question, Would you use a large disk or a small one?

A.—I am a little undecided in regard to that. We use a medium-sized disk in preference to a larger one—something like fourteen inches, I think. The smaller disk will certainly do more pulverizing.

Q.—Do you think a small disk goes sufficiently deep?

A.—I think so. The fourteen-inch disk would go sufficiently deep. The third method of preparing the seed-bed for wheat is the listing method. When a farmer farms so much land that he cannot plow it all each year, he starts the lister after harvest and lists out the ground. There are two ways in which to finish the seed-bed. One is to list again, splitting the ridges and leveling the ground with a disk and harrow. The other is to work the soil back into the furrows with the disk and harrow without any more listing. Usually the farmer has time to list only once, disk once or twice, and harrow once or twice. By that time he has worked the soil back into the furrows and has leveled the seed-bed. This is an ideal way to catch and store the rain. The furrows take the water right into the subsoil where it belongs, and the after cultivation covers it up with a mellow soil mulch which prevents loss by evaporation. I believe this listing method is a good plan for Western Kansas, but in Missouri plowing would perhaps be preferable.

Q.—Would you do the listing as soon after harvest as you could? I presume you list your furrows as close together as for corn rows. If you list twice, how long would you wait before you list the second time?

A.—I would advise to list again at once as soon as the first list-

ing is finished. The difficulty is to get the soil settled by listing twice, and it is not commonly practiced.

Q.—Would it not be advisable to disk after the first listing and then list again?

A.—Yes; that should put the soil in a more pulverized condition.

Q.—There is a question I had in mind in my first question which has not been brought out, and perhaps I did not make it plain enough. You seem to gather that I had in mind the idea of a seed-bed for wheat. I had in mind a seed-bed for corn. We often find litter on the ground, which we plow under. My idea is that the farmer raises nothing to burn, and what is on top should go under. We put a lot of corn-stalks and grass under whenever we find it. If the ground is hard on top, we get only the top pulverized. The question is, What is the best method to get the ground pulverized and firm below in order to get that water up from the subsoil.

A.—The earlier you can plow, the better. Then the use of a disk and subsurface packer is about all I can offer with reference to getting the bottom of the furrow slice pulverized and well connected with the subsoil. If the ground is dry when it is plowed, it is almost impossible to do this with any kind of a tool, and you must depend almost entirely upon providence to give you enough rain to put the soil in good seed-bed condition.

Q.—You do not advocate that we must depend upon providence entirely though, do you?

A.—No, not too much. Of course, we must depend upon providence, but we must do our part.

Annual Exhibit of the Departments of Domestic Science and Domestic Art.

Kedzie Hall presented a busy scene Wednesday as the guests invited to view the class demonstrations availed themselves of the opportunity. In each laboratory in the Domestic Science Department a different line of work was shown. The short-course girls demonstrated the making of biscuits and cocoa, also how to furnish a menu for breakfast, dinner, and supper, price to average twelve and one-half cents each meal. The trays prepared to illustrate invalid menus looked extremely appetizing.

In another laboratory the senior girls were making and serving salads and cream puffs. The junior girls were preparing, cooking and serving croquettes and veal birds. Sugar kisses were baked by electricity in still another laboratory, and were served to all.

A splendid work is being accomplished in domestic science, and Professor Calvin and her assistants are to be congratulated upon the success crowning their efforts. We think the members of the classes are to be congratulated also, for so wisely deciding to follow a line of work which will enable them to live more useful, broader lives.

The second annual exhibit in the Domestic Art Department, in charge of Miss Becker, superintendent, was given Wednesday in Kedzie Hall. The exhibit was much larger than last year, and contained many pretty gowns, fancy waists, and underwear of all kinds. The girls will not need to worry about their Easter dresses, for they are all finished and ready to don. Their design and workmanship reflect great credit upon the instructors. The College is fortunate in having Miss Becker at the head of this department.—*Nationalist.*

The baseball schedule for spring term has not been fully completed, and a number of dates are yet open, but the following games have been definitely arranged for:

AT HOME.

April 3, Fort Riley.
April 8, St. Paul.
April 12, Washburn.
April 17, College of Emporia.
April 19, Ottawa University.
April 29, Missouri University.
May 4, Drury College.
May 6, Baker University.
May 11, State Normal.
May 18, Fairmount.
May 20, St. Louis University.
May 22, Kansas University.
May 23, Kansas University.
May 29, Lindsborg.
June 12, Fort Riley.
June 20, Haskell Indians.

AWAY FROM HOME.

April 22, Baker University.
April 23, Haskell Indians.
April 24, Kansas University.
May 13, College of Emporia.
May 14, State Normal.
May 15, Washburn.

Manager Dean tells us that the College team will appear in new uniforms of gray, trimmed with the College colors.

During the basket-ball season, which closed with the last of March, the College team has played eleven public games. Of these it won 5 and lost 6. The games played and the scores were:

K. S. A. C., 37; Washburn, 28.
K. S. A. C., 27; Haskell, 28.
K. S. A. C., 46; Bethany, 28.
K. S. A. C., 39; Missouri, 19.
K. S. A. C., 29; K. U., 25.
K. S. A. C., 52; Ottawa, 25.
K. S. A. C., 18; K. C. Dentals, 23.
K. S. A. C., 24; Baker, 54.

ON TRIP:

K. S. A. C., 39; Haskell, 54.
K. S. A. C., 24; Baker, 70.
K. S. A. C., 25; Ottawa, 44.

The March number of the College *Jayhawker* is a typographical beauty and full to the brim with well-written College news and alumni correspondence.

THE INDUSTRIALIST

Published weekly during the College year by the Printing Department of the

Kansas State Agricultural College

Manhattan, Kansas.

PRES. E. R. NICHOLS.....Editor-in-Chief
PROF. J. D. WALTERS.....Local Editor
PROF. J. T. WILLARD.....Alumni Editor

Local Notes.

Professor McKeever will lecture on "Education and the Formation of Habits" before the convicts of the State Penitentiary on Easter Sunday.

Mrs. T. E. Barbour arrived Thursday night from Mexico for a month's visit with her daughter, Miss Margaret Barbour, of the Physical Training Department.

Mr. W. H. Andrews, assistant in mathematics, has been invited by the Council Grove Chautauqua Association to deliver a series of ten lectures on "The Literary Study of the Bible," July 12 to 22.

Professor Eyer's senior class in electrical engineering visited the city electric light and power plant on Thursday and Friday of last week to make observations and measurements.

J. H. Miller, superintendent of farmers' institutes, went to Junction City on Wednesday to speak at a special meeting of the commercial club. Junction City is talking of a corn carnival in the fall and Mr. Miller gave them pointers on corn contests, etc.

The annual stock-judging contest of the Department of Animal Husbandry was held in the judging pavilion last Monday, and resulted as follows: First, J. A. Milham with 543.42 points out of a possible 600; H. L. Popenoe with 525.42; B. C. Copeland, 516.17; C. F. Blake, 504.77; W. T. McCall, 496,09; C. H. Alspaugh, 495.75; C. J. Lindsay, 491.15; G. P. Potter, 487.25; W. H. Wight, 485.84; and A. H. Rose, 484.60.

Kansas had such a good apple and peach crop last year, and in some places prices were so low, that there has been much talk about an overproduction. Men who had thought of setting out large commercial orchards have hesitated and farmers who had about decided to enlarge their orchards have been "backing out." These conditions led to an interview with Prof. Albert Dickens, horticulturist of the Kansas State Agricultural College. While he is thoroughly familiar with all the orchard troubles—moths, worms, fungus pests, etc.—in the handling of the big experimental orchards of the College, and from investigation of hundreds of orchards throughout the State, he is absolutely sanguine that we are in no danger of an overproduction of good fruit of any kind. He also believes that people ought to eat more fruit and that a large production of good, marketable stuff would induce larger purchases. Then, too, he believes in larger and better farm orchards of all kinds of fruit, not only for marketing but for home consumption.—*Nationalist.*

Saturday evening, March 23, Asst. W. H. Andrews served as a judge in the annual contest between the literary societies of the Dickinson County High School, at Chapman. The other judges were: Supt. Geo. R. Crissman, of the Salina schools, and Miss Hobbs, of Bethany College, Lindsborg.

The spring meeting of the Kansas City Association of Alumni and Former Students of the Kansas State Agricultural College will be held at the Atheneum, Ninth and Locust streets, on April 5, at 8 o'clock. The secretary of the association, Dr. G. W. Smith, wishes that all parties intending to attend should notify him before the above date.

Alumni and Former Students.

Bertha Cowles, '05, attended the Choral Union concert and visited relatives and friends in College several days afterward.

Changes of address: Helena Pincomb, '01, Lenexa, Kan.; Dorothea (Secrest) Hungerford, '85, Manhattan, Kan.; C. R. Hutchings, '94, Chihauhau, Mexico.

Albert Todd, '72, asks that the address of his INDUSTRIALIST be changed to Lieutenant Colonel Albert Todd, War Department, Washington, D. C. He has been stationed at St. Paul and had the rank of major. The inference is that he has received another promotion.

C. C. Winsler, dairy student in 1900 and student assistant in dairying in 1901, has a position with the Topeka Pure Milk Company. He is at the head of the ice-cream department and is taking steps to make sure that the output will comply with the Kansas food and drugs law.

F. A. Dawley, '95, visited the College this week for the first time in five years and inspected a few of the changes that have taken place during the interval. He is looking quite natural and is deeply interested in seeing that the best Poland-China stock is available to the people of the State. His home folks sale at Osborne last week was quite successful.

W. H. Edelblute, '92, Rathdrum, Idaho, is entering upon his fifth year as county surveyor of Kootenai county. Although the county was divided the salary was left unchanged. He has also recently been appointed United States deputy mineral surveyor for Idaho. This adds to his responsibility as well as to his income. His second son was born on the 16th instant, and is said to be "a howling success."

The Utah legislature has made its annual visit to the Utah Agricultural College at Logan, and to the extent of four hundred and fifty at the first table was banqueted by the domestic arts girls under the direction of Dalinda (Mason) Cotey, '81, dean of the school of domestic science and arts. The success of this feature of the trip doubtless had much to do with creating the favorable impression which was made.

Domestic Science and Art Number.

THE

INDUSTRIALIST

Vol. 33 No. 23

Issued Weekly By

Kansas State Agricultural College

Manhattan, Kansas

"Teaching Girls to Cook and Sew"

"Courses for Young Women at Kansas State Agricultural College"

Mrs. Henrietta Calvin

"Sewing as Taught in K. S. A. C."

Miss Antonetta Becker

"Original Designs"

J. D. Walters

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Kansas State Agricultural College

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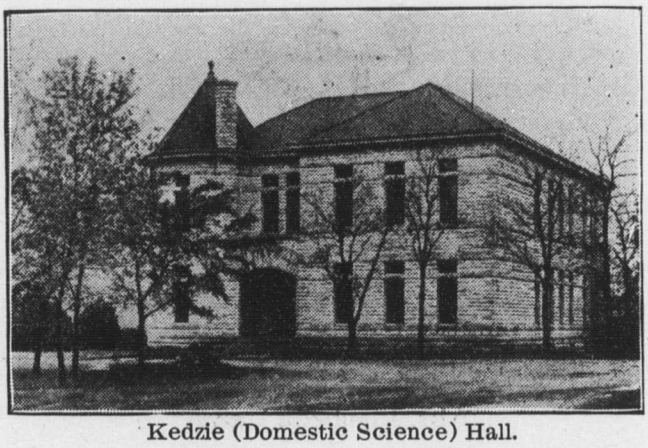
E. R. Nichols, President



Kedzie (Domestic Science) Hall.

Domestic Science Department

Mrs. Henrietta Calvin, Professor
Miss Ula M. Dow, Instructor
Miss Marjorie Russell, Assistant
Miss Clara Willis, Assistant

Domestic Art Department

Miss Antonetta Becker, Superintendent
Miss Ina Cowles, Assistant
Miss Gertrude Stump, Assistant

THE INDUSTRIALIST.

VOL. 33. MANHATTAN, KAN., APRIL 6, 1907. No. 23

Teaching Girls to Cook and Sew.

SCIENCE APPLIED TO HOME MAKING.

The Kansas Agricultural College not only offers short courses for the farmers' boys, but also offers a most practical "short course" for the girls. This is a fall and winter course, twenty-four weeks, beginning October 2 and ending March 1, taking that period when the farmers' daughters can best be spared from the homes. There are thousands of girls who cannot afford, or at least their parents think they cannot afford, to attend the College for the full four-year course. To these the short course comes as a great privilege. Kansas girls are bright and ambitious, and when denied the opportunity for a college education naturally take the next best that is offered. All girls do not want to teach, but all normal girls want to know how to be good housekeepers. And so the Agricultural College short course has had seventy Kansas girls here this winter taking instruction and getting ample practice in cooking and sewing, or, as the teachers say, in domestic science and domestic art.

END-TERM DEMONSTRATIONS.

As usual, the departments arrange for a public demonstration of the winter work, and on Wednesday, March 27, Kedzie Hall was crowded with visitors, students, citizens, and out-of-town people, friends of the students.

DOMESTIC SCIENCE DEPARTMENT.

In one laboratory the senior girls were found at 1:30 making salads and cream puffs for the visitors, and the expressions of praise later attested to the art and skill of the girls. In another room your correspondent found the short-course girls baking biscuits (like mother used to make) and cakes, all for the visitors. In another laboratory a large class of junior girls was making chicken and veal croquettes and fixing up vegetable salads, and possibly other good things. There were so many girls, and all at work, that it was impossible to make out what all were doing.

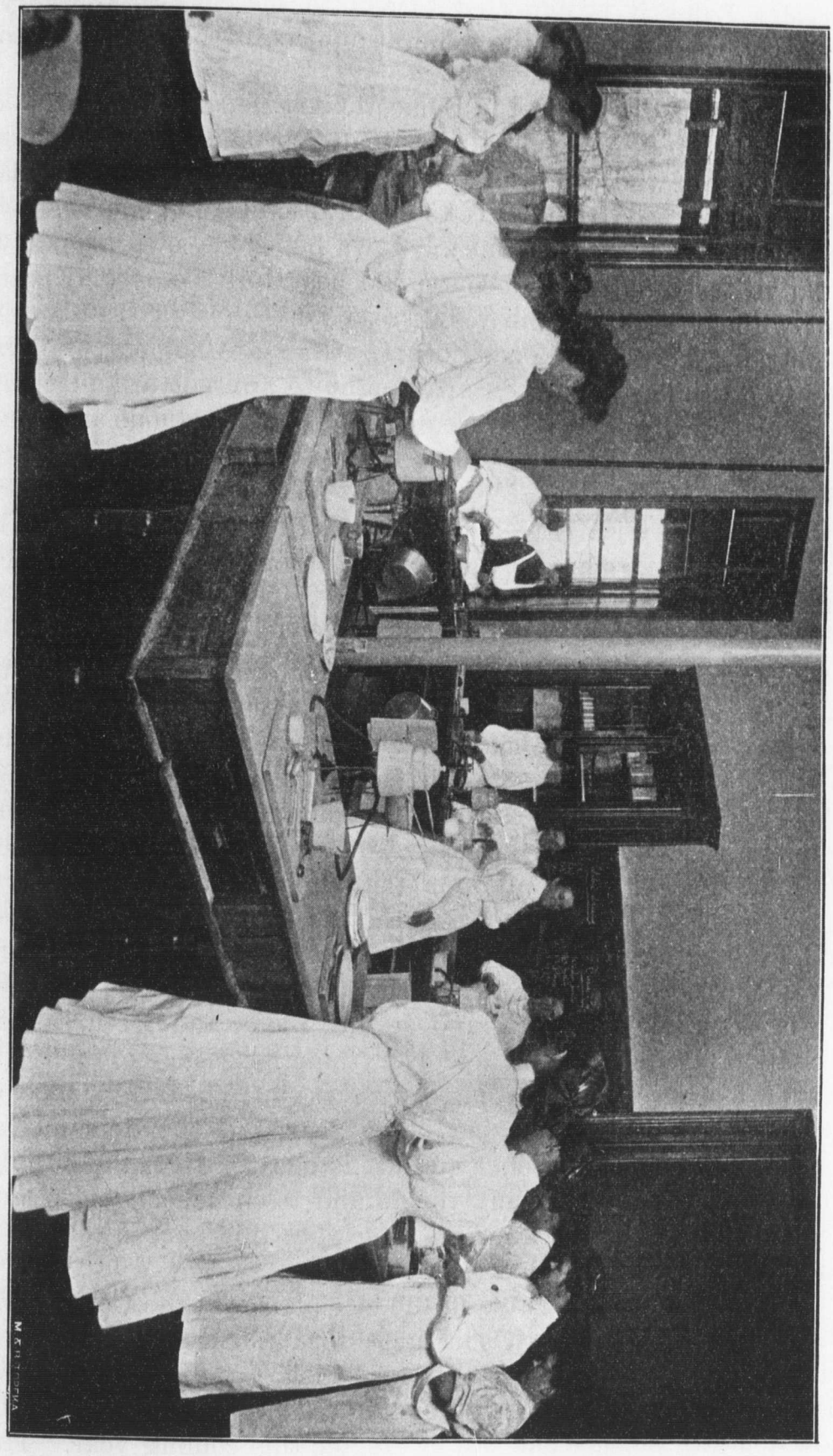
But it was noticeable that each girl knew what she was to do and knew how to do it. The visitors and comers did not bother them in the least.

The short-course students devote their whole time to work in cooking and sewing, with a few lectures on floriculture. Three hours are spent each day in hearing lectures and in recitations, with an equal amount of time in practice work in laboratories and sewing rooms. The first term's work includes plain cooking, vegetables, vegetable and cream soups, cereal dishes, milk dishes, eggs, meats, and study of yeast and bread making. Mrs. Calvin is very insistent that the girls be instructed in the science of cooking as well as in the mere practice. The second term's work calls for more advanced work, preparation of breakfasts, luncheons and dinners, and in canning fruit, making jellies and preserves. Instruction is also given in household economy, sanitation, and nursing. The very interesting exercise and requirement given every winter is to have these girls divided into squads or parties of five. These five are to serve a certain number of meals for members of the Faculty and assistants from a very limited amount of money given them by Mrs. Calvin. One girl is to do the purchasing for a certain number of meals, another the cooking, another the serving, etc.

DOMESTIC ART DEPARTMENT.

The whole of the second floor of Kedzie Hall is devoted to the Domestic Art Department, where girls are given a very thorough course in both plain and fancy sewing and in the making of plain and the more substantial gowns. Miss Antonetta Becker has charge of this department, and under her management the work is growing very rapidly, not only in character but in popularity with the student body. The work is crowded pretty heavy for the short-course people, as they are given in one term practically what the regular College students are given in three terms.

The work of the regular domestic art courses ranks in the College with the other courses and calls for five terms' work, and it is probable that another term will be added next year. The first term is devoted to what is termed "model" work, plain and fancy stitching according to model, making careful notes and submitting same. The second term is devoted entirely to the making of underwear, the third term to the preparation for and the making of the unlined dress, the fourth term to the making of the lined dress, and the fifth term to the making of jackets. In all this work each girl must draft her own pattern and do all the work



Senior Class in Cooking.

herself. Later it is expected to add to the course, millinery, basketry, weaving, and the general subject of household decoration.

The work on display in the Domestic Art Department included over one hundred gowns and more than that many waists, skirts, etc. Many of these gowns were quite elaborate, the material costing all the way from $15.00 to $30.00, each girl, of course, paying for her own material and the gown being her own property.

No visitor could pass through the beautiful rooms of Kedzie Hall without realizing the very great value of this training in domestic science and domestic art. Girls are not only taught how to do things, but they are taught to appreciate and enjoy doing artistically what is so frequently deemed arduous and commonplace. Mrs. Calvin and Miss Becker are doing a great work for the Kansas girls who are sent to the College, and the taxpayers of the State may justly feel that the work of these two women is of as great importance as the work in other departments of the College.

TEACHERS' COURSE, MAY 21.

The introduction of domestic science into many of the county and city high schools has led to the recognition of this subject in the State teachers' examination requirements. The high schools, then, that want to introduce this subject into their schools must take teachers who have had training and who can take the State examination in domestic science. This teachers' course will open May 21 and will continue for ten weeks. In this teachers' course great attention is given to the theory of cookery, composition, preparation, and digestibility of foods, and also to the theory of teaching both cookery and sewing. Ample practice is provided for in laboratory, kitchen, and sewing room, and lectures and recitations are made to include everything necessary to the training of teachers for this important work. The attendance of teachers has been increasing every year, but the demand for teachers of domestic science and art is greater than the supply. The term opens after many village and town schools close, and hence it is possible for teachers who want this course to take it and be prepared for their work next fall.

The phenomenal increase in the attendance at the College and the large attendance of girls in these departments made it necessary for the Regents to ask the last legislature for an appropriation of $70,000.00 for a new building. This was granted, and a new domestic science hall will be erected this coming year. This will be large enough to accommodate easily one thousand girls in cookery and sewing.

Courses for Young Women in the Kansas State Agricultural College.

Thirty-three years ago President Anderson called the attention of the Board of Regents to the fact that in all institutions for the education of women, the young women were educated in literature, languages, and in art, but never in those subjects that would fit them to be home makers and housewives. He stated that no matter for what a woman was educated, that in the majority of instances she became a wife and mother with little or no training for her duties, and that this too often was productive of unhappiness and discontent in the home; and he concluded by urging the introduction of household arts instruction into the Agricultural College. This effort on the part of President Anderson resulted in the teaching of sewing, and later of cooking, in the regular course. Thus the Kansas State Agricultural College became one of the first in the United States in which this training was offered. Since that time over four hundred young women have graduated from the Collge, practically all having received some training in domestic science. In all else women's studies have been the same as men's, the domestic science being substituted for those employments that were especially adapted to the occupations of men.

Two courses are now offered that are suited to the needs of young women—the general science and the domestic science. The first of these gives a broad scientific education. Bacteriology, physiology, zoölogy, geology, botany, higher mathematics, English literature, civics, economics, one year of chemistry and two years of German are among the subjects required. Industrial training, which is a requisite in all courses, may be elected in one of several lines by those in this course. It is quite customary for the young women to elect their industrials and their three senior electives in the Domestic Science Department, thus obtaining a training very similar to that of the domestic science course.

DOMESTIC SCIENCE COURSE.

The domestic science course was instituted as a separate course nine years ago, and since that time it has been the most popular course for young women. In this course about one-third of the student's time is given to culture studies, such as literature, German, history, economics, and mathematics, one-third to scientific studies that either directly or indirectly bear upon household subjects, and one-third of the time to those subjects that directly constitute domestic science.

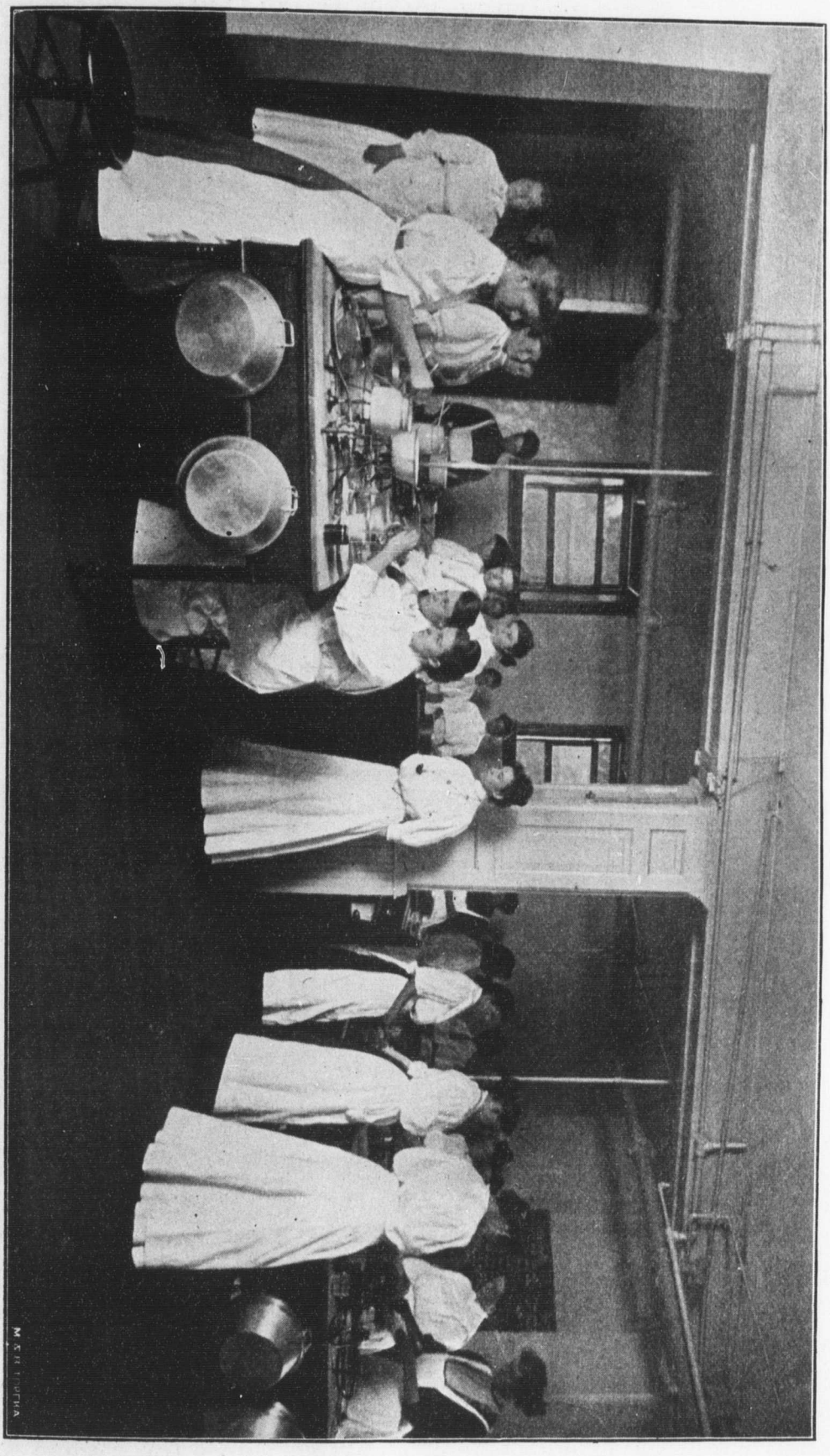
In the first year of the course the student is required to take

three terms of sewing, one of elementary cooking, and one series of lectures in personal hygiene. (This is true also of the young women in other courses.) In the second year there is one term's work in dressmaking, in which thorough instruction in cutting, fitting and finishing is given, the student making one full gown for herself during the term. Lectures on fabrics are given at the same time. The rest of the second year is devoted to laying a strong scientific basis for the after domestic science studies. In the third year the student enters the Domestic Science Department, and thereafter this branch becomes her major study. Twice each week three hours are given to domestic science—one hour for theory, two hours for practice. The source, chemical composition, characteristics, cooking, digestion and metabolism of each food is taken up, the reasons for all processes explained, the economic and dietetic value of each food considered. Thorough instruction in food reservation is a part of the course. In all work the reasons are sought for. During this year lectures are given in home nursing, and twelve lessons in practical laundering are a part of the course. In the fourth year one term is devoted to household management, one to dietetics, and one to the relation of diet to disease, with practice in advanced and in invalid cookery. There are three electives in the senior year. There are advanced courses in domestic science offered for those expecting to teach that may be taken as these electives. All other departments offer electives so that the young woman may increase her information in whatever she has come to be most interested in.

Home making is considered to be the profession and mission of women, and the course is planned with this end in view, but it is made so strong scientifically that its graduates are finding positions as teachers of domestic science in every state of the Union.

DOMESTIC SCIENCE SHORT COURSE.

Besides the four-year course offered by the College, there is a short course of one fall and one winter term—a six-months' course. In this the practical parts of domestic science are emphasized, and as much of the theory is presented as students are prepared to understand. Completion of the county common schools is a prerequisite for entering this course. Those who for lack of time or want of means cannot take the long course will find this course of great value. Three hours each day are spent in cooking, two in sewing, and one in either floriculture, drawing, or home nursing. The sewing and cooking are almost exactly the same as the work given in the longer course.



Junior Class in Cooking.

MUSIC, DRAWING, PHYSICAL CULTURE.

Music is here accepted as a factor in the education of most girls and is offered free as an industrial for one term or more. Courses are offered in voice, piano, violin, mandolin, and guitar. Instruction is also offered in drawing, the educational value of which can hardly be overestimated. Work is given in object drawing, geometrical drawing, color and design, home decoration, and in all industrial and architectural forms of drawing. All young women in the College have access to the privileges of the gymnasium, while those below the third year must elect physical training or music. Daily classes are held in light gymnastics, and gymnastic games are taught to those who care to learn.

EXPENSES.

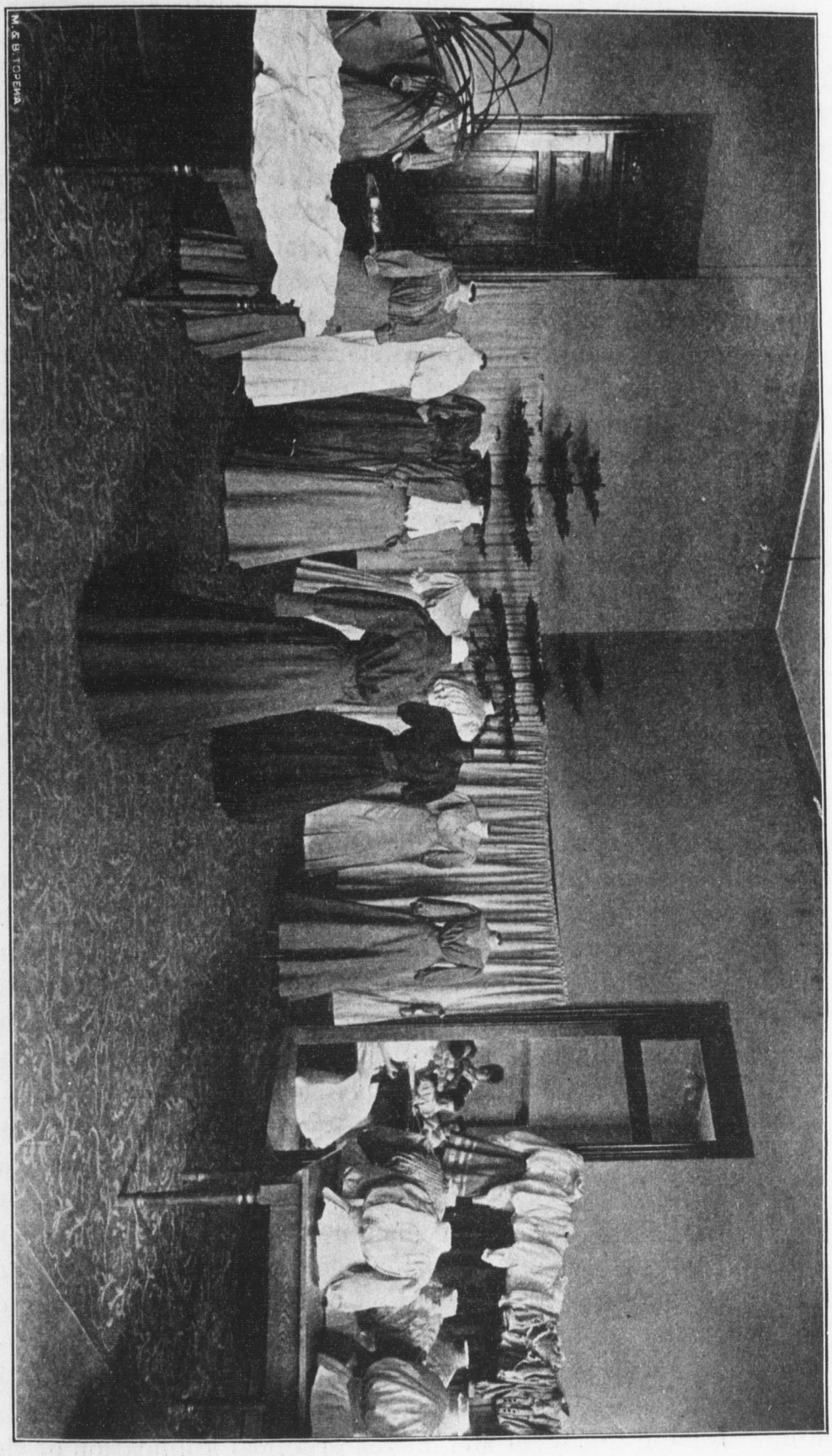
Many questions come in regard to expenses. These here, as elsewhere, depend much upon the individual. Usually a student will not be able to find room and table board in the same house. Rooms will vary from five to eight dollars per month according to location and conveniences, such as furnace heat, electric light, bath, etc. This expense is, of course, divided by two when two young women room together. Board varies from two and one-half to three dollars per week. Three dollars per term is all the expense attached to attendance at the College for students from Kansas. Books, clothing, laundering and personal expenses are to be considered. Some young women find places to work for their board, and some lessen their expenses by joining with other young women and boarding themselves.

MRS. HENRIETTA CALVIN.

Sewing as Taught in K. S. A. C.

Womankind is just beginning to realize the importance of an education along the lines of domestic art, and to appreciate the bearing it may have upon her comfort and happiness and upon the comfort and happiness of those dear to her. In all the wide field of industry which has come to be known as woman's work there is not so much as one small duty which may not be better accomplished by means of a knowledge of the art of its performance.

One who has studied the art of sewing may find pleasure in the making of a gown where her more ignorant sister might consider it a hardship should she be obliged to serve herself or others in the same way. A trained milliner may bestow upon the hat she is constructing the loving pride of an artist, where the woman who knows vastly less might speak of it as an irksome occupation.



Results of Dressmaking Class.

Under a system which is carefully planned and properly carried out, learning to sew may be as educational a process as the pursuit of any other of the industrial arts. It then becomes a part of the mental as well as the manual training. By practice in needlework the hand becomes steady, dexterous, and powerful. But the eye must also be trained to observe correctly, to compare sizes and forms and to measure spaces, in order that the worker may fix evenly, sew regularly, draw and cut out accurately, and construct properly and tastefully.

Sewing, as it is taught in the Domestic Art Department of this College, not only enables the student to make herself an entire outfit, but also teaches her to design and draft her patterns.

The student first provides herself with a note-book, in which she is required to preserve notes and place the models in the order in which they are given. At the commencement of the lessons there is a talk on sewing and the correct position to be assumed for it. Sundry kinds of needles and their particular uses are described, and thread and its manufacture touched upon. After a discussion on cloth, its weaves, and the meaning of fold and nap explained, the pupil is ready to begin practice work on stitches. These are taken up in their proper order, starting with basting and running, sewing of seams and hems, over-seaming on lace, gathering of ruffles, mitred corners, patching, French hem on linen, mending of table linen, making of plackets and bands, matching stripes, both straight and on the bias.

These lessons are all accompanied by talks explaining when and in what manner each class of stitches should be applied. The first material used in these lessons is the half-bleached muslin, then the plain white muslin, then the India linen or white nainsook. Each piece of work is securely fastened in the book, opposite the notes referring to it, thus making a permanent and ready hand-book to which the pupil may turn.

The lessons have by this time progressed to the use of flannel, including the different seams and stitches used. Darning bias and three-cornered tears on fine dress goods next receive attention, followed by the darning of stockinet. Then comes the joining of lace and embroidery. Buttonholes on muslin and on flannel are next taken up; also sewing on buttons and the placing of hooks and eyes.

When the model work has been mastered by the pupil she is ready for the second term, which comprises hand and machine sewing. During this term she makes practical application of the

information acquired in the previous term, by drafting and making undergarments.

Having completed the first two terms she may now enter upon the third, with advanced hand and machine sewing, drafting, cutting, fitting, and making of a cotton dress in madras, linen, lawn, or percale. The third term finished she is ready for the dressmaking class, where she is taught drafting and cutting from measure and the cutting, fitting, making and trimming of gowns. Talks on color and kinds of material; also the various results of stripes and plaids for people are discussed.

After the dressmaking is completed the student is allowed to take a special course in sewing, which includes a jacket suit or a dress of a more elaborate design than in the previous term.

When entering as a regular or short-course student the first, second, third and fourth terms' work are required. The material for the models is furnished by the College, but the student is required to furnish her own material for the second, third and fourth terms' work.

It seems a pity every girl is not given a training in at least some of the branches of art as applied to every-day life. Whether or not she has personal need of the knowledge thus gained it would be extremely beneficial in aiding her to comprehend the relative values of things.

There are many schools and colleges that are giving courses in domestic art, but there are not enough, nor will there be until every girl in the land shall find it possible to gain, without other price than her own earnest effort, a full knowledge of domestic art.

ANTONETTA BECKER.

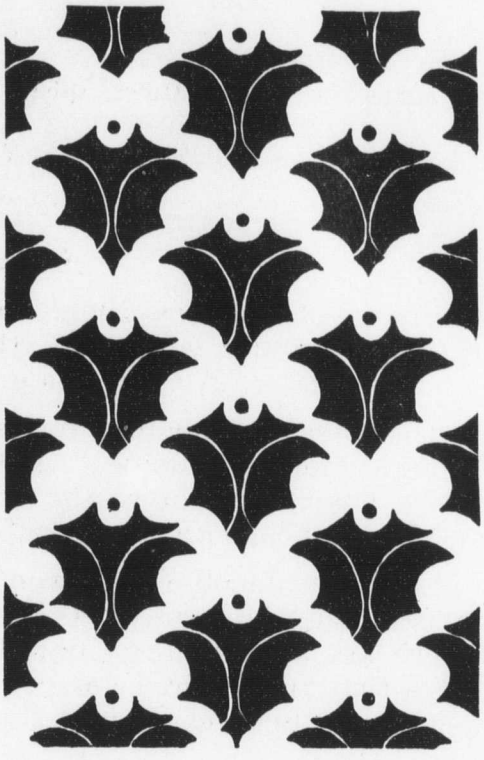
"The farmers' institute held at Lyndon, March 30, voted to organize a boys' corn-growing contest, electing County Superintendent Parke special contest secretary. At least five prizes will be offered, the prizes to be trips to the State institute next winter at Manhattan, paying railroad fare and board for nine days. A representative of the State Agricultural College was present and spoke on 'Selecting Seed-Corn.'" This is one of a dozen items before us on our desk, all of which speak of the organization of boys' corn-growing contests in the different parts of the State and the good work now being done in this line by the Faculty and especially by J. H. Miller, superintendent of farmers' institutes of this College.

Original Designs.

STUDENTS, especially those from country districts, who enter the domestic science short course are usually surprised when they are refused English or history studies and are assigned to drawing during the first term. Many ask that the five hours a week given to drawing during the fall term be devoted to some other study, yet they invariably take an extraordinary interest in this work as soon as they have had the first three lessons, and vote the study a highly practical one long before the mid-term examination. The same is true of the students in the regular four-year course in domestic

science who study color and design and home decoration, though these students are expected to do work of a much broader character. An interest is taken in drawing, and especially in original designing, that is a constant surprise even to the teachers.

A good part of the time of all the classes named is devoted to surface design—that is, designing as applied to wall papers, tile and parquet floors, and textile fabrics. All class work is based on geometry and the scientific laws of color relations. The six designs in this issue, together with the initial letter (s), are printed from photo-zinc etchings made from original designs by the junior class in color and design, taught by Miss Ella Weeks. Several hundred of these designs by the different classes were on exhibition on the walls of Professor Walters' lecture room last Com-



mencement, and a large number of these would have furnished equally interesting illustrations. The accompanying designs were selected because of their uniformity in size and style. All of them would give better results in print if a warm gray, dull brown, gray-blue or bronze-green ink could have been used. The initial is the original work of Miss Blanche Robertson.

THE INDUSTRIALIST

Published weekly during the College year by the Printing Department of the

Kansas State Agricultural College

Manhattan, Kansas.

PRES. E. R. NICHOLS.....Editor-in-Chief
PROF. J. D. WALTERS.....Local Editor
PROF. J. T. WILLARD.....Alumni Editor

Local Notes.

President and Mrs. Nichols gave a reception to the members of the Board and Faculty and their wives last Thursday night at East Parkgate. All report a good time.

The veterinary hospital is again being crowded with sick animals brought from a distance. At the present time there are horses in the hospital from Keats, Riley, Winkler, Washington county, and Flush, besides a number of horses in the vicinity of Manhattan.

Engineer Jacob Lund went to Fort Riley last Thursday to inspect the boilers of the abandoned central heating plant. There are several large new boilers there, some of them never used, that are for sale cheap, and Mr. Lund thinks they might be used in the heating plant at this College.

During the past week Docter Barnes has had several calls to the country, making it possible for him to take students to witness and assist in several operations on animals that could not be brought to the veterinary hospital at the College. Now that spring has apparently come, the farmers residing near Manhattan are taking advantage of this opportunity of having their animals treated by the College and thereby furnishing laboratory work for the veterinary students in surgery.

K. S. A. C. Weather Report for March, 1907.

March, 1907, sets a new mark for high temperature, the mean monthly temperature being 51.2°, which has not been equaled in the 49 years' record kept at the College. The nearest approach was 51.08° in 1905, and 50.89° in 1860. The temperature of 95° on March 25 was the same as recorded for March 28, 1895, but has never been exceeded. The mean maximum temperature was 63.3°, and the mean minimum was 39.1.

The minimum temperature was 15° on the 2nd.

There were 21 clear, 4 part clear and 6 cloudy days. The rainfall was 1.37 inches, 1.1 falling on the 9th. Only a trace of snow was recorded.

The average wind direction was from the southwest. The run of wind was 8045 miles for the month, which was below normal, the average for the past 18 years being 8391. The maximum velocity was 30 miles, on the 26th, between 1 and 2 P. M.

The mean barometer was 28.92 inches for the month. Highest, 29.51 inches on the 31st, the lowest, 28.40 on the 28th.

The frost on the night of 30th did little damage. Peaches and plums were in bloom by the 15th and crop conditions are fully a month in advance of those usual in March.

THE INDUSTRIALIST

Vol. 33 No. 24

Issued Weekly By

Kansas State Agricultural College

Manhattan, Kansas

Published by

PRINTING DEPARTMENT

J. D. Rickman, Supt.

Entered at post-office, Manhattan, Kan., as second-class matter. Act of July 16, 1894.

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Miss Ada Rice, B.S. (K.S.A.C.).....Instructor in English
Miss Ella Weeks, A.B. (U. of K.).....Instructor in Drawing
Miss Daisy Zeininger, B.A. (Fairmount).....Instructor in Mathematics
George F. Freeman, B.S. (Ala. Polytech. Inst.).....Instructor in Botany
Geo. C. Wheeler, B.S. (K.S.A.C.).....Instructor in Animal Husbandry
Leonard W. Goss, D.V.M. (Ohio State University).....Instructor in Veterinary Science
Geo. A. Dean, M.S. (K.S.A.C.).....Instructor in Entomology
Robert E. Eastman, M.S. (Cornell University).....Instructor in Horticulture
Miss Ula M. Dow, B.S. (K.S.A.C.).....Instructor in Domestic Science
William L. House.....Foreman of Carpenter Shop
Miss Gertrude Barnes.....Assistant Librarian
Louis Wabnitz.....Foreman of Machine Shops
Miss Ina E. Holroyd, B.S. (K.S.A.C.).....Assistant in Preparatory Department
Ambrose E. Ridenour, B.S. (K.S.A.C.).....Foreman in Foundry
Miss Emma J. Short.....Assistant in Preparatory Department
Miss Ina Cowles, B.S. (K.S.A.C.).....Assistant in Domestic Art
Theo. H. Scheffer, A.M. (Cornell University).....Assistant in Zoölogy
Miss Kate Tinkey.....Assistant Librarian
Earl N. Rodell, B.S. (K.S.A.C).....Assistant in Printing
Miss Helen Thompson, B.S. (K.S.A.C.).....Assistant in Preparatory Department
Roy A. Seaton, B.S. (K.S.A.C.).....Assistant in Mechanical Engineering
M. Francis Ahearn, B.S. (Mass. Ag. College).....Foreman of Greenhouses
Miss Cecilia Augspurger (Illinois Wesleyan).....Assistant in Music
Miss Gertrude Stump, B.S. (K.S.A.C.).....Assistant in Domestic Art
M. Sheldon Brandt, Ph.B. (Yale).....Assistant in Architecture and Drawing
Heman A. Wood, B.S. (Olivet).....Assistant in Chemistry
Chas. Yost.....Assistant in Heat and Power Department
Earle B. Milliard.....Foreman of Blacksmithing
J. T. Parker.....Assistant in Woodwork
Wm. H. Andrews, A.B. (Chicago).....Assistant in Mathematics
Miss Leila K. McCotter, B.S. (Michigan).....Assistant in Mathematics
Miss Edetha M. Washburn, A.B. (K.U.).....Assistant in English
J. D. Magee, A.M. (Chicago).....Assistant in Mathematics
E. G. Meinzer, A.B. (Beloit).....Assistant in German
Miss Florence S. Latimer, B.M. (Ferry Hall Seminary).....Assistant in Music
Miss Marjorie Russell (Mechanics' Institute).....Assistant in Domestic Science
Herbert F. Bergman, B.S. (K.S.A.C.).....Assistant in Botany
C. A. Willson, B.S. (Mich. Agr. College).....Assistant in Animal Husbandry
Burton Rogers, D.V.M. (Iowa State College).....Assistant in Veterinary Science
Henry D. Scudder, B.S. (Illinois).....Assistant in Agronomy
Miss Clara Willis (Framingham Normal).....Assistant in Domestic Science
C. O. Swanson, M.Agr. (Minn.).....Assistant Chemist, Experiment Station
Herbert H. King, M.A. (Ewing College).....Assistant in Chemistry
Edw. C. Crowley, Ph.B. (Yale).....Assistant in Chemistry
Hugh Oliver.....Assistant in Heat and Power Department
Miss Charlaine Furley, B.A. (Fairmount).....Assistant in Preparatory Department
Miss Jessie Reynolds, A.B. (K.U.).....Assistant in Preparatory Department
Miss Anne M. Boyd, A.B. (Jas. Millikin Univ.).....Assistant Librarian
D. M. Wilson.....Assistant in Dairy Husbandry
Leland E. Call, B.S. (Ohio State University).....Assistant in Agronomy
Miss Mary F. Nesbit, A.B. (Illinois University).....Assistant in Mathematics
Miss Annette Leonard, A.B. (K.U.).....Assistant in English
William C. Lane, B.S. (K.S.A.C.).....Assistant in Physics
William R. Lewis.....Janitor

THE INDUSTRIALIST.

VOL. 33. MANHATTAN, KAN., APRIL 13, 1907. - No. 24

Agriculture for Boys and Girls.

The Kansas State Agricultural College has not only been working all these years for the young men and women who have entered as students, but for many years it has sought for the benefit of the boys and girls who could not attend. Two years ago the Regents inaugurated more specific extention work than had heretofore been done, and this lead to more work than has been attempted by any other institution in the country. The farmers' institute work has developed the fact that even the best farmers are slow to change to new methods, even when they are recommended by the men of the Experiment Station, in whom they have great confidence.

This being true, it lead to the conclusion that the year's progress in farming must be reached through interesting the boys. Therefore the College, through the Farmers' Institute Department, announced last year a boys' corn-growing contest, and then earnest efforts were made to induce every institute organization in the State to take it up. The plan was to have a contest for boys between the ages of ten and eighteen, inclusive, in each county, the boys winning out in the local contest to send their corn to the State contest held here at the College and compete for the State prizes.

Contests were held last year in forty-seven counties, some counties subdividing the work making fifty-one distinct contests, with a membership of nearly five thousand boys.

This year a good many changes were suggested, first and most important being that all boys in the contest last year were asked to join this year and be assigned to Class A, and to plant their own corn, their best ten ears, in an ear to row contest in either ten or twenty rows, thus planting about an acre and a quarter. This plan would call for detasseling the alternate rows next summer, and detasseling all inferior stocks, weighing out at gathering the corn from each ear, and taking for seed the next year ears from the detasseled rows that had the heaviest yield. It is a well-known fact among corn breeders that ears looking exactly alike

will produce different yields, one possibly yielding at the rate of twenty bushels per acre and the other ear at the rate of sixty bushels per acre. It was felt that this part of the work would be the most important—the second lesson, as it were, to the boys in corn breeding.

All new contestants would be in Class B, and each be given one quart of corn, as last year, planting and caring for as last year, and bringing to the farmers' institute next fall their best ten ears.

Another suggestion made by the College was to give as premiums for the boys a trip to the State farmers' institute held here next winter and lasting nine days. It was thought the paying the boys' railroad fare and board for nine days that he might attend this institute, where practically all the time would be devoted to corn judging and stock judging, would be worth far more to the boys than would any possible cash premium. Practically all the counties in Eastern Kansas are undertaking the contest work given, and nearly all have acted on the suggestion and will send boys to the State institute instead of giving them cash prizes.

Several counties are yet without farmers' institute organizations, and in these the commercial clubs of the leading cities have been asked to undertake the contest for the boys. Among these are Salina, Junction City, and McPherson, where the commercial clubs each voted $100 for prizes, and will send from ten to twenty-five boys next winter to the State institute. This indicates a great growth in the sentiment that agricultural prosperity means city prosperity. It means also that these cities realize that a corn contest and corn carnival are worth looking after, and better than traveling street fairs.

As an experiment the College also suggested this year the holding of contests for boys in potato growing, gardening, and that the girls be invited to undertake flower-gardening contests. So far very few counties or villages have undertaken this work. It is rather disappointing, but possibly not enough attention has been devoted to the subject in farmers' institutes, and hence there is not enough general interest. Still, in Dickinson county over two hundred girls have been enlisted in the flower contest. In Cherokee county there is quite a large list of boys who have enrolled for the garden contest, and in other counties a few contests have been started in the growing of potatoes. These contests were suggested not so much for the boys and girls of the country as for the boys and girls of the villages, and here is where the superintendent of farmers' institutes is most sorely disappointed. It was hoped that scores of villages would undertake these in order

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to interest their boys and girls in working with the soil and incidentally in cultivating scores of vacant lots that now grow up to weeds every summer. In the New England States, New York, and in some other Eastern states, these village contests are held in practically every village, and thousands upon thousands of boys and girls are instructed and helped by their work. The results are not only good from an educational standpoint, but also add quite a few dollars to the earning capacity of each boy and girl. However, "Out Here in Kansas" our boys and girls, like the men and women, deal in large acreages, and do not think much of gardening or handling small plots of ground. But next year our boys and girls will be ready for it through other extension work that is contemplated by the College for next winter, and the garden and flower contest will in the spring of 1908 be fully as popular as the corn contest.

All entries in the various corn contests will close some time this month, and probably by April 27 in every county where contests are to be held the seed-corn will have been distributed to the boys. When the names and addresses are sent in to the Farmers' Institute Department each contestant will receive a copy of the corn-contest circular, with general instructions, and later in the summer other literature that will be of interest and value to him. It is hoped to establish a very close relation between several thousand boys and girls of the Kansas farms and their own Agricultural College.

Tobacco and Liquor.

The following from Senator Beveridge's "The Young Man and the World" is such good advice that we reprint it with the hope that every young man will read and heed it:

"While I am on this subject I might as well say another thing: Do not think that you have got to smoke in order to be or look like a college man. A pipe in the mouth of a youth does not make him look like a college man, or any other kind of a man. It merely makes him look absurd, that is all. And if there is ever a time on earth when you do not need the stimulus of tobacco, it is while you are in college.

"Tobacco is a wonderful vegetable. It is, I believe, the only substance in the world which is at the same time a stimulant and a narcotic, a heart excitant and a nerve sedative. Very well. You are too young yet to need a heart stimulant, too young to need anything to quiet your nerves.

"If at your tender age your nerves are so inflamed that they

must be soothed, and if at the very sunrise of your life your heart is so feeble that it must be forced with any stimulant, you had better quit college. College is no place for you if you are such a decadent; yes, and you will find the world a good deal harder place than college.

"Cut out tobacco, therefore. For a young fellow in college it is a ridiculous affectation—nothing more. Why? Because you do not need tobacco; that is why. At least you do not need it yet. The time may come when you will find tobacco helpful, but it will not be until you have been a long while out of college. As to whether tobacco is good for a man at any stage of life the doctors disagree, and 'where the doctors disagree, who shall decide?'

"Ruskin says that no really immortal work has been done in the world since tobacco was introduced; but we know that this is not true. I would not be understood as having a prejudice for or against the weed. Whether a full-grown man shall use it or not is something for himself to decide. Personally I liked it so well that I made up my mind a long time ago to give it up altogether.

"But there is absolutely no excuse for a man young enough to still be in college to use it at all. And it does not look right. For a boy to use tobacco has something contemptible about it. I will not argue whether this is justified or not. That is the way most people feel about it. Whether their feeling is a prejudice or not, there is no use of your needlessly offending their prejudice. And this is to be taken into account. For you want to succeed, do you not? Very well. You cannot mount a ladder of air; you must rise on the solid stepping-stones of the people's deserved regard.

"And, of course, you will not disgrace yourself by drinking. There is absolutely nothing in it. If you have your fling at it you will learn how surely intoxication's apples of gold turn to the bitterest ashes in the eating. But when you do find how fruitless of everything but regrets dissipation is, be honest with yourself and quit it. Be honest with the mother who is at home praying for you, and quit it. But this is weak advice. Be honest with that mother who is home praying for you, and *never begin it.* That's the thing—*never begin it.*

"In a word, be a man; and you will be very little of a man, very little indeed, if you have got to resort to tobacco and liquor to add to your blood and conduct that touch of devilishness which you may think is a necessary part of manliness. Indeed, between fifteen and thirty years of age your veins are quite full enough of

the untamed and desperate. I do not object in the least to this wild mustang period in a man's life.

"Is a fellow to have no fun? you will say. Of course, have all the fun you want; the more the better. But if you need stimulants and tobacco to key you up to the capacity for fun, you are a solemn person indeed—'solemn as cholera morbus,' to appropriate an American newspaper's description of one of our public men. What I mean is that you should do nothing that will destroy your effectiveness. Play, sports, fun, do not do that; they increase your effectiveness. Go in for athletics all you please; but do not forget that this is not why you are going to college."

New Things in Dairying.

Within the last few years the world has made the greatest strides in dairying that has ever been made in all history. Probably one of the newest and most important inventions that has been introduced is the milking machine. While some milking machines were invented nearly a hundred years ago, the first really successful machine has been put on the market within the last year. The development has been a gradual one, but one that has become finally successful. The milking machine, like a great many other things, needed only an introduction and a thorough test by a competent man that understands the principles that underlie the processes, and while these machines have been in vogue and are now becoming practical, it is only by studying the structure of the udder and the physiology of the cow that their application will become practical for the average farmer.

The "Thistle" machine, which is practically the same as some of the milking machines that are on the market to-day, was invented thirty years ago, but the little details which are so important in any mechanism were overlooked, and consequently it was impractical. This only goes to bear out the fact that there are many things which might be practical if the people would only have patience and study the facts more and lay more stress on the details.

The dairy business, as any other business, involves detailed work, and for this reason becomes remunerative. Already five different kinds of milking machines are on the market. All of them have been introduced within the last year. It has started a revolution in the dairy business. It has brought a new phase to the situation, and is again an invention that will require more intelligent labor to plan machines, to design the machines, to im-

prove them and to operate them, than the old-fashioned method of milking by hand.

The introduction of the radiator, a machine which extracts the butter from the sweet milk, is again coming into use in some parts of the country. While the radiator is rather an old principle, a new feature has been combined with the same, which makes it practical. This feature is the pasteurizing of the milk or cream before it enters the radiator and the separator only to such an extent that the cream or the milk can be ripened by means of starters.

At the Kansas State Experiment Station the introduction of lactic acid instead of commercial starters has been brought about for ripening cream. The manufacture of starters has become rather an expensive operation owing to the scarcity of the skim-milk in the western part of this country, which is brought about by the hand separator situation. Skim-milk at the present time, when delivered to the factory, is worth about forty cents a hundred, and requires a great deal of manipulation to get the right flavor. The American Acid and Alkali Company is now manufacturing acid which can be put on the market at a very reasonable price, and has submitted the same to the Experiment Station for trial. The acid has been so changed that it now favors decidedly the lactic acid as developed in the milk, and it gives a good flavor to the butter. By this method it is now possible to make butter from milk within an hour after it is milked from the cow. The butter will have the fine flavor and it will be equal in every particular to the butter made the old-fashioned way, by allowing the cream to ripen or sour in vats. This makes it much easier for the average butter maker to score the butter, for it has a more uniform flavor, while the difference in expense is small, and it is entirely practical. It has thus added a step to the progress of the science of dairying.

Some progress has been made in the use of electricity in connection with dairy operations. Probably one of the most successful of these is the method of pasteurizing milk and cream by means of an electric current. It can be done very economically and is unquestionably a practical scheme for city milk-distributing plants.

While the manufacturing side has made marked progress, the animal side of dairying has made equally great progress in producing milk more economically. The cow test associations, which are a new feature, and which embody a real development, consist merely in the value of a cow for milk and butter-fat production.

This is done by having the milk of each cow weighed and tested and by weighing the amount of feed consumed, which of course finally will determine the profit or loss of an individual animal. A final result in better dairying is accomplished by weeding out the poor animals. Breed associations have likewise been devised, in which the breeding of dairy animals can be scientifically carried out.

The introduction of alfalfa all over this country is making cheaper feed, but in a great many of the sections it has been difficult to harvest. A new feature has been invented by which alfalfa can be successfully harvested if silos are used. While alfalfa has been siloed heretofore, it has been rather unsuccessful, but from the many recent experiments carried on in this line, alfalfa is now being siloed with satisfactory results, and it has been found to increase the milk capacity of dairy cows to the extent of ten per cent over that of dry alfalfa hay.

While these are some of the important things that have been developed within the last few years there are, however, a great number of minor details that have been worked out in connection with the older problems, which are too numerous to mention.

A Dairy School on Wheels.

The first real dairy school that was operated on wheels that embraced all the manipulation of the dairy was carried on a special train by the Dairy Department of the Kansas State Agricultural College with the Missouri Pacific Railroad. This dairy special consisted of two coaches, in which the cows were milked with the milking machine, and the instructions were given as to the handling of these machines.

After milking the milk was separated and instructions were given in separation of cream. A number of machines and separators were exhibited in the car, all of which were in practical use. After that the cream was pasteurized, ripened, and churned.

These cars were placed on a side-track nearest to the center of the town where the demonstrations were given. Fourteen towns were visited on the Missouri Pacific system, beginning at Paola and ending at Genoseo on the main branch, and coming back over the southern branch through Lyons, Hutchinson, Wichita and El Dorado to Garnett. In connection with these demonstrations a meeting was held. All the meetings were well attended, but the demonstration was exceptionally a success.

The speakers that accompanied the train were Mr. J. Stinson,

industrial agent of the Missouri Pacific Iron Mountain Railway System, Dr. C. W. Burkett, Director of the Kansas Experiment Station, and Prof. Oscar Erf, of the Dairy Department of the Kansas State Agricultural College. Mr. Immenschuh assisted Mr. Erf in demonstrating the milking machines and other apparatus.

Kansas is a dairy State and is fast going to the front. Within the last six months it has been conservatively estimated that there has been twenty per cent increase in dairy products over the same time last year. This is a far greater per cent of increase than any of the neighboring states; in fact some of them have had a decrease rather than an increase. This speaks well for Kansas and for the Dairy Department of its Agricultural College.

A count of students assigned to spring term work was made in the Secretary's office on Thursday, April 11. It showed that there were 1068 students assigned on that day. The total assignments for spring term will probably be close to the eleven hundred mark. The following table gives the assignments by classes for the spring terms of this and last year:

	1906	1907
Graduates	8	8
Specials	25	22
Seniors	104	115
Juniors	118	131
Sophomores	155	188
Freshmen	382	269
Sub-Freshmen	—	270
Preparatory	83	65
Apprentices	1	—
Totals	876	1068

The Agronomy Department is undertaking extensive improvements on the old College farm land. Several large dams are being built across draws for the purpose of stopping the wash. The draws will be filled, fields levelled, and within two years Professor TenEyck expects to make these fields of considerable value, while as they are now they are valueless for agricultural purposes. The department is also building a lake just west of the College buildings, and proposes in making this excavation to haul much of the soil out to the old farm and spread it over the lands which are being reclaimed. In its present condition this land on the old farm is probably not worth $40 per acre while, when the contemplated improvements have been completed, it should have a value of at least $150 per acre. Professor TenEyck expects also to make this work the subject of a bulletin illustrating the methods and cost of reclaiming waste lands on the farm.

THE INDUSTRIALIST

Published weekly during the College year by the Printing Department of the

Kansas State Agricultural College

Manhattan, Kansas.

PRES. E. R. NICHOLS.....Editor-in-Chief
PROF. J. D. WALTERS.....Local Editor
PROF. J. T. WILLARD.....Alumni Editor

Local Notes.

College butter retails at 33 cents per pound at present.

The Dairy Department reports a considerable increase of dairy products for the past two weeks.

President Nichols was at Topeka Wednesday and Thursday attending the April meeting of the State Board of Education.

The ceremonies of dress parade and review will be drilled by the College battalion on Friday of each week, at the regular drill hour, 2:45 P. M. Visitors are cordially invited to attend.

The Horticultural Department has commenced to grade the campus in front of the new Horticultural building. There is a good deal of work to be done in that part of the grounds.

The Agronomy Department finished seeding small grains some two weeks ago. Only a small acreage was planted, including twenty-five acres of oats, ten acres of barley, and small plots of other spring grains.

Supt. J. H. Miller was at a farmers' institute at Oberlin, Friday, going from there to Atwood, where a meeting was held on Saturday. Professor Ten Eyck attended the Oberlin institute on Saturday afternoon and talked on "Corn Breeding."

The Riley county normal institute will be held during the month beginning June 3. The following instructors have been engaged. Supt. Nathan Veach, Atchison; Prof. L. D. Griffee, Jewell City; Prin. Jennie Broughton, Randolph; Co. Supt. Hanna Wetzig.

Cap. Geo. H. Shelton, general staff, United States Army, will make the annual inspection of the cadet corps on April 24. Special drills have been ordered for Saturday afternoons until after the inspection. The appearance of the cadets is much improved this year by the new gray uniforms.

Work on the College farm during the last two weeks has been for the purpose of preparing the ground for corn. All of the corn fields have been either disked or listed, the purpose being to conserve the soil moisture and put the land in good seed-corn condition. The corn will not be planted before the last of April.

A civil service examination for the position of scientific assistants in the United States Department of Agriculture will be held on April 17 and 18. Applicants must be twenty years old or over. The positions for which these examinations will qualify pay from $600 to $2000 per year. Candidates should write at once to United States Civil Service Commission, Washington, D. C., for a copy of regulation 1312.

State Architect Stanton has already completed the preliminary sketches for the new Domestic Science Hall, and President Nichols, Professor Calvin and Superintendent Becker are revising them. Mr. Stanton promises to push the preparation of drawings and specifications to the utmost and hopes to have them completed in a few weeks. The building will be located directly south of Kedzie Hall and parallel with the Auditorium. Its main front will be toward the east.

Bulletin No. 147, from the Agronomy Department, has just been placed in the hands of the printer. The subject of this bulletin is "Indian Corn." The following subjects are discussed: A trial of varieties, breeding and selecting seed-corn, date of planting, proportion of seed-bed, methods of planting, fertilizing for corn, rotation of corps with corn, and shrinkage of corn in crib. The subject-matter of this bulletin includes four years' experiments, and will be very valuable.

The College people will be pleased to hear that *Popular Science Monthly* has accepted an article contributed by Mrs. H. F. Roberts entitled, "The Problem of International Speech." In view of the well-known prominence of the journal, and the great interest the intelligent public is now beginning to manifest in the solution of the problem by Esperanto, the College circle most cordially congratulates Mrs. Roberts upon the distinction implied by the acceptance of the article.

The Board of Regents held their regular spring session last week. A large amount of routine business was done. Arrangements were made for the immediate rebuilding of the horse barn at Hays Experiment Station, which burned from lightning last July. The list of employees and their salaries for the next College year was considered and many were given a substantial increase. Arrangements were made for a large amount of agricultural experiments to be started this season. All Regents, including the newly appointed members, Edwin Taylor and W. E. Blackburn, were present.

The following letter from the clerk of the school board of Parsons, Kan., is one of many of a similar kind that are being received here every week: "I have just received a copy of the INDUSTRIALIST entitled Vol. 33 No. 23, on the subject of cooking and sewing. If you could spare me a hundred copies of this pamphlet I wish you would send them to me. I will buy them if it is necessary. I desire to distribute them here in town and among the members of the board and school teachers so that they may get correct ideas on what is being done in the State institutions, and especially in the Agricultural College, of the work of which I have been an ardent admirer. During the years 1890 to '95 I sent requests for Experiment Station pamphlets for about three or four hundred farmers in the vicinity of Parsons. Since that time there has been quite an interest taken in the work of the College by the farmers in this county, and they have had several farmers' institutes here since then."

SPRING ELECTIONS OF STUDENT OFFICERS.

The seniors elected the following officers for the spring term: President, May Umberger; vice-president, May Griffing; secretary, Mary Kimble; treasurer, Flora Hull; marshal, Lulu Rannells; assistant marshal, Ellen Hanson.

The juniors elected the following officers: President, Elmer Bull; vice-president, Bessie Tolin; secretary, Gertrude Grizzell; treasurer, Erma Gammon; marshal, D. K Morris.

The following have been elected by the sophomores: Casey Bonebrake, president; G. C. Rexroad, vice-president; Anna Harrison, secretary; G. D. Noel, treasurer; Joe Lill, marshal.

The freshman election resulted in the election of E. E. Truskett, president; Edna Willis, vice-president; Miss Smith, secretary; L. O. Solt, treasurer; Hope Palmer, marshal.

The subfreshmen have elected for president, Roy Coleman; vice-president, Fern Jessup; secretary, Lucy Platt; treasurer, Etta Sherwood; marshal, L. A. Sikes.

The junior class elected the following staff for the junior number of the *Herald:* Editor-in-chief, E. S. Taft; associate editor, Helen Sweet; literary editor, Dora Harlan; local editor, Bert Smith; reporter, Oley Weaver; associate local editors, W. T. McCall and Helen Huse; "devil," Bennie Jeffs.

The College literary societies have elected the following officers:

Hamilton.—President, Joe Montgomery; vice-president, R. W. Brink; recording secretary, J. E. Martin; corresponding secretary, H. A. McLenon; treasurer, R. L. Lawrence; critic, P. E. Lill; marshal, E. L. Adams; chairman board, W. G. Shelley; chairman program committee, R. C. Thompson.

Webster.—President, J. R. Coxen; vice-president, Jesse George; recording secretary, Earl Thurston; corresponding secretary, Fred Hayes; treasurer, Claude Connor; critic, H. Wierenga; marshal, F. X. Downey; chairman of board, S. W. Cunningham; chairman of program committee, C. J. Stratton.

Ionian.—President, Ethel Berry; vice-president, Marie Bradshear; recording secretary, Mabel Hazen; corresponding secretary, Margaret Copley; treasurer, Esther Christensen; critic, Catherine Ward; marshal, Lulu Docking.

Eurodelphian.—President, Lulu Rannells; vice-president, Leona Moore; recording secretary, Hallie Smith; corresponding secretary, Reva Cree; critic, Hallie Smith; marshal, Irene Taylor; chairman program committee, Marie Coons.

Alpha Beta.—President, Allen Philips; vice-president, Maude Harris; recording secretary, Ella Hathaway; corresponding secretary, Walter Zahnley; treasurer, L. B. Mickel; critic, H. G. F. Oman; marshal, Myrtle Kahl.

Athenian.—President, Thomas Haslon; vice-president, O. A. Stevens; recording secretary, R. E. Talley; corresponding secretary, F. F. Harri; treasurer, O. R. Snapp; critic, C. H. Hanson.

Franklin.—President, Ole Oleson; vice-president, B. C. Copeland; recording secretary, Eva Wheeler; corresponding secretary, Mr. Kappelman; critic, Amy Elder; marshal, Erma Gammon.

A list of the battalion officers of the present term will be published later.

ITEMS LEFT OVER FROM LAST WEEK.

Professor Potter and wife are the happy parents of a big baby boy.

The outside doors to Anderson Hall were treated to a coat of paint this week.

Professor Walters was elected councilman of the second ward at the city election last Tuesday.

Professor Kammeyer is moving into a residence recently erected at the corner of Bluemont Avenue and Seventh street.

Supt. J. D. Rickman and wife gave a house-warming party to the employees of the Printing Department last Monday night.

The city has commenced the work of grading and paving the sidewalks of Vattier street and Bluemont Avenue. Both will receive vitrified brick sidewalks reaching from the College campus to Third street.

The baseball game between the College and Fort Riley, in the Manhattan Athletic Park last Wednesday, resulted in a victory for our boys. The score stood 5 to 3. This was the first public game of the season and is considered a good omen.

The poultry department has turned the pheasants out into the yards provided for them. Of the three pairs that were liberated last fall, one pair has been located near Keats, another pair is on the open prairie about four miles northwest of the College, and the third pair is still on the campus.—*Herald.*

The returns from the Riley county examinations held Saturday show that the tendency of the times is toward more and higher education. The number of applicants for county diplomas far exceeded the anticipations of those connected with the schools. While not all the returns have been received, Ashland reports 7, College Hill 21, Keats 17, Leonardville 51, Ogden 14, Stockdale 7, Winkler 20, and Zeandale 16.—*Mercury.*

The Board of Regents attended the morning chapel exercises in a body last Friday and feasted their eyes on the multitude of bright young Kansans assembled there. President Nichols called on Hon. Edwin Taylor, one of the newly appointed Regents, to speak to the students, and he responded with a short address in which he said that the State had spent large sums of money and much energy in rearing the magnificent institution at Manhattan, and that it had a right to demand at least one thing of the student, namely, that he attend to business and make the most of his opportunities. The address was well received and vigorously applauded.

Dan Walters left for Independence, Kan., last Saturday to work in an architect's office. He will return in September and complete his senior work.

Professor Walters went to Kansas City, Kan., on Friday evening to attend the annual reunion of the Kansas City alumni and former students of the Kansas State Agricultural College. On Saturday (to-day) he will address the teachers of Kansas City, Mo., on "The Rise and Growth of Technical Education."

Alumni and Former Students.

Born, to F. J. Rogers, '85, and Mrs. Rogers, a son, John Rankin, March 27, 1907.

Eva (Burtner) Potter, '05, presented her husband, Professor Potter, with a fine boy born April 2.

F. E. Uhl, '96, with the Meyer Sanitary Milk Company, Kansas City, Kan., visited the College recently.

The friends of F. C. Sears, '92, and Ruth (Stokes) Sears, '92, will rejoice with them in the birth of twin daughters, Florence Hart and Elizabeth Kent, April 3, 1907.

Changes of address: E. G. Gibson, '96, 825 Lincoln street, Topeka, Kan.; A. E. Oman, '00, Pocatello, Idaho.; A. N. H. Beeman, '05, 2454 Tracy street, Kansas City, Mo.

W. B. Thurston, '06, has resigned his position at the Maryland State Agricultural College and has accepted one with a dairy concern in Kansas City.—*Students' Herald.*

W. H. Phipps, '95, manager of the sales department of the Empire Cream Separator Company, Kansas City, visited the College last week and was much interested in looking over the additions to the equipment. Mr. Phipps, it will be remembered, was the first graduate to serve as a Regent.

R. S. Kellogg, '96, with H. M. Hale is the author of Bulletin No. 74 of the forest service, upon "Forest Products of the United States for 1905." Mr. Kellogg writes the introduction and articles upon "The Lumber Cut in the United States in 1905" and "Timber Used in the Mines in the United States in 1905."

Mrs. S. C. Tunnell, mother of Jane C. Tunnell, '89, and Elizabeth Tunnell, former student, died at Hospital, Ill., Monday, April 1. The burial took place at the cemetery in Manhattan on Thursday, April 4. The services were attended by many old friends of the Tunnell family, including a number from out of town. The Misses Tunnell have returned to Illinois.

The following have returned for graduate work this term: Odessa Dow, '06, German and music; Josephine Edwards, '05, therapeutic cookery, domestic science elective, and home nursing; Edith Coffman, '06, advanced domestic science, advanced organic chemistry, sewing, and music; Alma McRae, '06, trigonometry, analytical geometry, and domestic science elective.

Geo. T. Fielding, '03, recently lectured before the electrical engineering department of the Massachusetts Institute of Technology on the subject, "High Tension Electrical Transmission."

Agnes (Fairchild) Kirshner, second-year student in 1881, 3320 Baltimore Avenue, Kansas City, Mo., attended the funeral of Mrs. Tunnell, and visited the College and friends before returning to her home.

Fifteen graduate Ionians met with Gertrude Rhodes, '98, on Tuesday evening, April 9, and elected officers for the next six months. They also discussed matters of interest for the near future, and after listening to an interesting letter from a former Ionian, Hilda (Walters) Emch, in which she described her Swiss home, and receiving messages and news from other absent Ionians, the company adjourned to the Candy Kitchen to refresh themselves before going home. The officers elected are as follows: President, Harriet (Vandivert) Remick, '97; vice-president, Lena M. Finley, '05; secretary and treasurer, Gertrude Stump, '96; critic, Ada Rice, '95; members of the board, Ina Holroyd, '97, Edith Davis, '05, and Katharena Winter, '01.

The annual banquet of the alumni and former students of the Kansas State Agricultural College living in Kansas City and vicinity was held last Friday night and was attended by about seventy-five persons. Prof. J. D. Walters, who was one of the invited guests, reports that they had a very social and patriotic gathering. There was first a business meeting and election of officers, then came a number of speeches, talks, and College reminiscences. Among those who spoke were H. Rushmore, L. P. Brous, Clarence Holsinger, B. L. Short, Dr. A. T. Kinsley and Miss M. Johnson. Mr. Brous, now a dignified educator himself, told for the first time, he said, who "dappled" the white horse, but he was certain there was no tar in the mixture. Professor Walters was then called upon for a short address, in which he assured the friends of the College that the great technical school at Manhattan was all right, was going ahead, and was growing as it never grew before. Open letters were read from Dr. O. E. Olin, a former English professor of the school, from I. D. Graham, formerly the Secretary of the College, and from Mrs. Nellie Kedzie Jones, of the class of '76, a former principal of the College. An invitation was tendered by C. A. Chandler, '00, superintendent of Swope park, to the association to hold its fall meeting in the auditorium at the park, and was accepted. Just before adjournment resolutions of respect in memory of Phil Creager, a former president of the association, were presented, which read as follows: "*Resolved*, By the alumni and old students present at the Kansas City branch of the K. S. A. C. association that we tender to Mrs. Phil Creager our sympathy in the death of her husband. In Mr. Creager we recognize one of our very most esteemed and valuable members, and we deplore his untimely death." Officers for the ensuing year were chosen as follows: President, B. L. Short, '82; vice-president, Mrs. Olive (Wilson) Holsinger, '95; secretary-treasurer, Dr. A. T. Kinsley, '99.

THE INDUSTRIALIST

Vol. 33 No. 25

Issued Weekly By

Kansas State Agricultural College

Manhattan, Kansas

Published by

PRINTING DEPARTMENT

J. D. Rickman, Supt.

Entered at post-office, Manhattan, Kan., as second-class matter. Act of July 16, 1894.

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THE INDUSTRIALIST.

VOL. 33. MANHATTAN, KAN., APRIL 20, 1907. No. 25

The Cement Block.

A few years ago when the cement block first made its appearance it was believed that it would soon become a serious rival of the natural stone and the vitrified brick in almost all building operations. So far, however, it has not made much headway except in cheap foundation work and light retaining walls. Many cities where two or three years ago large quantities of cement stone were consumed by the building trade report a decided decrease of the business. This is all the more disappointing because in all other branches of building and engineering the "new giant" cement has been entirely successful and its use has increased at a wonderful rate. What is the matter with the cement block?

The writer believes that he can name a few points that need mending. In the first place there should be more cement and less sand and less dirt in the concrete mixture. Extreme economy on the part of the block maker has been a chief cause of the decay of this promising business. The faces of the blocks are too rough and porous. They absorb too much moisture in wet weather, freeze badly, become dark colored, and show abrasions.

In the second place there should be better mixing of the concrete material and more water in the mixture. The whole mass must be thoroughly wet when mixed so that the composition may "crystallize" and become hard. The block, after having been formed, should be kept in a cool and moist place, and should be well protected from sun and wind so that it will harden before it becomes dry. It should be sprinkled several times a day for a week after it has been set away, or it should be exposed to steam-saturated air. A natural or artificial cave in a hillside would be an ideal place for hardening cement blocks. A majority of the blocks which the writer has examined show that they were being dried out long before the hardening process was completed. It was evident that little precaution had been taken to prevent them from drying as fast as they naturally would.

But the main cause for the limited use of cement blocks is un-

doubtedly in the unsatisfactory looks of the finished wall surface. The blocks should be used in a greater variety of patterns and sizes. As laid in most walls, there is not the slightest variety of form nor the least attempt at a change of size. The same block face appears all over the wall in endless repetition. A real rock wall does not appear so monotonous. Each stone shows an individuality of its own; all show careful joining and a general similarity of color, but no more. The most pleasing wall face is the "Broken Ashlar," because it emphasizes this individuality and thus adds life to the pattern. The cement block, if it is used in imitation of stone-work, must adopt the same diversity of faces.

A much better method would be to abandon all efforts at imitating stone-work and try instead to create new forms—strictly cement forms. Every new building material had to do this when it first appeared. Over in France and other countries of Central Europe they make much smaller cement blocks than here, and they use them as we use brick, or they cover them with a characteristic plaster coat. By interspersing the block walls made of small blocks, with bands and cornices of large blocks, they often obtain a wall of highly artistic character. It would pay us to study this possibility and make the most of it. It is certain that a much better effect can be produced in this manner than by repeating the eight by twenty-four inches range ashlar, and the writer does not believe that the cost would be much increased.

Two years ago, while making a trip through Colorado, the writer observed a method of using cement blocks as a veneer to framed structures. The veneering plates were three inches thick and had a surface of about six square feet. They were nailed with wire spikes to the outside sheathing and showed a pleasing broken ashlar design that interlocked neatly after the real and false joints were pointed. The design and the distribution of openings, that is, windows and doors, showed that the problem had been carefully studied and that the few plate patterns seemed to produce an almost endless variation. Such a veneer is, of course, simply a makeshift, but it is one of the more acceptable kinds.

In many parts of Central Europe the cement-block wall is carried up in rough shaped, cheap blocks, and is plastered on the outside. The plastering is not put on with the usual tools, but it is spattered against the surface. The mechanic dips a stiff birch broom in the cement mortar and strikes with the filled tool a piece of iron or wood which he holds in his left hand. The mortar is discharged by the shock of contact and spatters against the wall, where it adheres. This process is repeated till the whole surface

is properly and evenly covered, thus producing a very handsome and characteristic rubble surface which they call "Spirimur" (swallow's wall). When doing this spattering they cover all frames and the cut stone or galvanized iron parts temporarily with coarse wrapping-paper. The work of producing this "Spirimur" surface does not consume much time and is soon learned. The coating never comes off, and the wall looks monolithic, which would perhaps be the most congruent form that could be given a structure consisting uniformly of cement and sand.

It seems plain that something must be done by the manufacturers of cement blocks to make their goods more popular. The block is such a convenient building material that it deserves all the development of which it is capable. To this time it has been made by men who generally lacked taste and experience in building and who have had but little capital to experiment with or push the manufactured article; by men who sought chiefly to produce a cheap substitute for stone, and did not think of creating a new building material with distinct characteristics and capable of forms of its own. The conditions remind the students of architecture of the time when the Greeks began to build of stone, but kept on imitating the old wood forms—the triglyph and the medula. It took centuries for them to emancipate themselves of the idea of imitating the old entablature with the new materials, but it should be a short step for us to invent and bring into use new "cement forms," because we do not cling to the old with much reverence.

J. D. WALTERS.

The Seed-Wheat Bill.

The following bill, enacted by the last legislature, will make it possible for the Kansas farmer who desires to grow wheat to renew his seed from abroad at actual cost, placing the responsibility of finding, procuring and distributing it on the State; that is, on the State Agricultural College:

"*Whereas*, The raising of wheat in the State of Kansas is one of the great sources of wealth and income to the State, and as it is of the very highest importance that the quality of the seed-wheat of the State should be of the very highest; and

"*Whereas*, It is conceded by those most competent to judge that the quality of the wheat and yield per acre deteriorates from year to year, until it becomes extremely desirable to obtain new seed from abroad thereby tending to greatly increase the quality and yield of the grain; and

"*Whereas*, The work and expense of properly investigating the

quality of the imported seed-wheat, the purity of the variety, its freedom from noxious seeds and vicious substances, and desirability of introduction requires a large outlay of money and special knowledge, and the work should therefore be placed under the authority of the State, which has the means and in its Agricultural College the qualified and trained experts to obtain the best results: therefore,

"*Be it enacted by the Legislature of the State of Kansas:*

"SECTION 1. That the Board of Regents of the State Agricultural College, located at Manhattan, Kan., shall thoroughly investigate the quality of seed-wheat found in Europe or elsewhere especially adapted to and desirable for sowing in Kansas, and if a satisfactory quality is found they shall notify the board of county commissioners of the several counties in the State of Kansas when a satisfactory quality and quantity of such seed-wheat can be purchased, and give the probable cost per bushel delivered at the county seats of the several counties in the State.

"SEC. 2. The board of county commissioners of the several counties shall give at least thirty days' notice in the official papers of their respective counties, setting forth that seed-wheat can be imported under the supervision of the Board of Regents of the State Agricultural College, and will be for sale to applicants at the actual cost thereof, stating what such cost will probably be, and that all who are desirous of purchasing imported seed-wheat shall make application for and may obtain for cash the quantity they desire, which shall not be in excess of twenty-five bushels for each head of a family or household.

"SEC. 3. Every applicant for seed-wheat shall be required to deposit with the county commissioners of his county the amount of cash required to pay for the wheat that he applies for, and to state in writing, on blanks furnished by the Board of Regents of the State Agricultural College, that he or she is a *bona fide* resident of the county of Kansas from which he applies for said seed-wheat, and has been for the year past, and that he has the necessary ground on which to sow said wheat, and proper tools and teams for seeding and harvesting the same, and that he will properly sow the same and harvest the crop therefrom, together with such other information as may be required by said Board of Regents of the State Agricultural College, and will make such report on the said seed and its products as may be required.

"SEC. 4. It shall be the duty of the board of county commissioners, or some one whom they may designate, of the several counties of the State to make requisition upon the Board of Regents of

the Agricultural College for such amounts of seed as may have been ordered under this act, and to remit to the said Board of Regents the money therefor, and thereupon on receipt of said requisition and money the said seed shall be procured and shipped as directed to the county commissioners for distribution.

"SEC. 5. The board of county commissioners shall receive the sum of two dollars per day for the time actually employed in carrying out the provisions of this act; provided such compensation shall not exceed in any one year the sum of twelve dollars for each commissioner, the same to be paid by their respective counties.

"SEC. 6. For expenses necessarily incurred in properly executing the intents and purposes of this act there is hereby appropriated from the funds of the State not otherwise appropriated the sum of twenty-five hundred dollars, or so much thereof as may be necessary, payable upon vouchers properly authenticated by the Board of Regents of the State Agricultural College.

"SEC. 7. The State auditor is hereby directed to draw his warrants, in favor of the Board of Regents of said Agricultural College, upon the treasury of the State from time to time for the amount of said vouchers. All requisitions by said Board of Regents for warrants hereunder shall be accompanied by a detailed statement of the expenses, verified by oath by the individual incurring such expenses.

"SEC. 8. This act shall take effect and be in force from and after its publication in the official State paper."

County Experiment Stations.

The last legislature made arrangements authorizing the board of county commissioners of any county in which an agricultural experimental station has been or shall be established by the Board of Regents of the Kansas State Agricultural College to purchase a tract of land for such station and to levy a tax for the payment of the same. The bill reads as follows:

"*Be it enacted by the Legislature of the State of Kansas:*

"SECTION 1. The Board of county commissioners of any county in this State in which an agricultural experimental station has heretofore been, or shall hereafter be, established and located by the Board of Regents of the State Agricultural College of Kansas, is hereby authorized to purchase a suitable tract of land, not exceeding 320 acres, in such county, and lease or donate such tract to the Board of Regents of said College for experimental purposes in agriculture; provided, there shall be presented to said board of

commissioners a petition praying for them to purchase and pay for the same by a tax to be levied for that purpose, signed by not less than one-half of the legal voters of said county, as shown by the election returns at the last preceding general election held in said county; and provided further, that the cost of such tract of land shall in no case exceed the sum of five thousand dollars."

How to Make Kansas Famous as a Live-Stock State.

One of the first and most important improvements necessary to make Kansas a famous live-stock state is better blood. This can be said about sheep, cattle, and hogs.

As the ranges are taken up by the small farmers, the old-time western ranges will be of no profit, but by breeding pure-bred or good-grade cattle the feeds that are raised can be fed to a greater profit. Land and labor are too high to permit anything but good animals to be raised and fed.

Take it among horses, I think the great drawback of to-day is trying to breed the dual-purpose horse. Horse markets show that real heavy draft or the good light coach bring far better prices than do what may be termed the dual-purpose horses. In cattle, experiments show that grades and pure-breds give better returns for the feed consumed. Among hogs the difference is not so great, as the farmers as a whole have fairly well bred up hogs.

"Using better blood" does not necessarily mean that all the stock should be eligible to be recorded; that would be too expensive, but by using good sires (pure bred) the herds of any line of stock may be improved. Another thing, the farmers should not dispose of the choice of their herd, even though the poorer ones will not bring as good prices.

Some ideas as to what is a balanced ration may also be an improvement in making stock raising and feeding profitable.

HARRY OMAN.

The first thing I would suggest is for the legislature to pass a bill providing for the castration of all male animals that do not comply to a rigid set of laws fixed by the legislature. This would do away with much of the so-called scrub stock, which lowers the value of all stock. The male animals spoken of should be of pure-bred stock and pass a certain examination, held by some competent judge. This is probably more true with horses at the present day than with all other stock.

The method of selling the pure-bred stock out of herds is

another point. Almost all breeders sell their very best stock at the sales for the mere sake of advertisement. Part of this stock may stay in the State and part may go out of the State. This latter part will not do the State any good, and probably the standard of that certain breed of stock will be lowered by the loss of that stock. The breeders should sell off their poorer stock at sales, and let as much of it go out of the State as possible.

J. A. MILHAM.

First the farmer should pay more attention to his breeding stock; scrub bulls and boars should be disposed of, and good pure-bred ones bought in their places. Even if no pure-bred females are used, in the course of time the stock will be greatly improved. If possible, a law should be passed prohibiting the bringing into the State of scrub stallions and the standing of stallions that are not registered.

State fairs are great helps. There good animals are shown, and this gives the average farmer an idea what a good animal should look like, and by offering good prizes more stock will be shown.

K. S. A. C.'s feeding food stock and selling it over the State should help the general condition a great deal. A. ZIMMERMAN.

The first thing is to let the farmers and live-stock raisers know how to carry on the live-stock business successfully and how important it is to increase the fertility of the land. This can be done by the Experiment Stations and farmers' institutes; also by good write-ups in the agricultural papers.

Let everybody improve his stock. Get better railroad service. Break up the trusts. Force prices to go up. Learn the best possible methods for growing the largest amount of feed, and sell all this feed in the form of live stock. This will not be done to any great extent until the fertility of the land becomes low.

The importance of having sheep on the farm should not be left out, for there is no animal that is more profitable and economical to the farmer, even the small farmer.

To make Kansas famous, all scrubby stuff should be put out of the way, and only well-bred stuff should be raised. O. J. OLSEN.

The breeding of more and better pure-blooded stock will put Kansas to the front. It is comparatively new at this time, and consequently the herds are not as well established as they will be in the future.

The Poland-China sale held at Salina a few weeks ago was a record-breaker and attracted breeders from outside of the State. Many more such sales would give Kansas a great name for live-stock production. Breeders must get the best stuff if they want to get the best prices.

L. B. STREETER.

One thing that we can do to make Kansas famous as a live-stock state is to prohibit the use of scrub stallions, so as to improve our horses. Another thing that will help to make her famous will be to have just one large State fair, where the live stock of the State can be shown to the people. We could in this way get all the best stock of the State shown there, and thus make it more successful than the several State fairs can be, because we could get an appropriation from the legislature and have enough money so that premiums could be offered that would bring the best live stock in the State to the State fair.

We might pass a law to prohibit the use of unsound and inferior males for breeding purposes, and improve our live stock of all kinds.

We could help make the State famous by giving the Agricultural College the needed barns for housing their live stock, and a separate building for a judging pavilion for the use of the judging classes and for holding sales.

W. L. DAVIS.

The first thing to cause improvement in live stock in Kansas is more purity in the breeding of stock. Too many farmers consider an animal on four legs as a head of stock, and breed from such animals. The average farmer also knows too little of the proper methods of feeding. His animals make him money, but they don't top the market. He returns from the stock yards with money in his pocket, but he doesn't know how much of that money is profit.

The proper raising of the proper feed is lacking in some places. The farmers consider prairie hay and corn, raised year after year on the same fields, as all that is necessary for feed for cattle. The manure is left to rot in the feed lots. The corn gives poor yields, and the farmers make less money.

If the Kansas stock raisers had better cattle to begin with, gave them the proper feed and attention, knew the cost of every pound of gain, and watched the markets enough to know when to market their stuff, Kansas would become so famous that she wouldn't be able to hold the immigrants within her borders.

A. G. PHILLIPS.

Horses.—First we need a law to put every unsound stallion out of service. We need a better understanding of the principles of breeding and care of horses. We need more alfalfa and other muscle and bone producers in the feed, and less corn. We should strive to make Kansas City the leading horse market of the West.

Cattle.—More truly well-bred cattle and less pedigree, and down with inferior bulls. Railroad rates should be uniform and just. Worn-out farms should be seeded down and pastured. The farmers need to wake up to the value of stock farming.

Hogs.—More alfalfa and less corn. Better boars and a consistent system of breeding.

Sheep.—The farmers of Kansas should raise more sheep, and well-bred ones at that. Tax the dogs heavily and apply the tax to paying for sheep killed by dogs.

All classes of live-stock farming would be benefited by a law requiring veterinarians to pass an examination before allowing them to practice in the State. M. L. WALTER.

The first thing to do is to educate the farmers in general to the increased profit in handling pure-bred stock. A great many raise scrub stuff because they don't believe in fancy stock, and it will have to be proven to them that a pure-bred animal is just as useful, costs no more to raise, and brings more in any market. They should be convinced that a small but good foundation is better to start with than to begin too strongly. This applies to cattle, horses, hogs, and sheep. Also with the natural advantages of the State for sheep raising, and the profitableness of this business, more farmers should take to sheep raising. If they once get started in pure-bred stuff, and realize the increased profit and pleasure, they will continue.

More should be done to boom the State and county fairs in their prizes for good stock, as they do much to educate the common farmer.

Breeders of pure-bred stock over the State should have stronger organizations, do more advertising, and have the goods to show. Cut more of the poor males instead of selling them cheap as breeders. C. LAMBERT.

Kansas is already one of the leading states in the live-stock business, but some improvements are yet needed. The first thing that I would suggest would be to increase the number of sheep, especially of the mutton classes. The State is excellently adapted for the sheep business, and the markets for sheep are ever on the rise.

The second thing would be for the farmers of the State to cull out their cattle herds and get better stock. A farmer can raise an animal of good beef type almost as cheaply as he can a scrub, perhaps cheaper, and his beef type of steer, when he is ready for the market, will double his income. In the pure-bred business, there is also a tendency for the breeder to sell his best stock. This is a mistake. If he is to make a success he should keep his best and sell the culls; if they are not fit to sell as pure-breds they should go to the feed lot.

There are good openings in the pure-bred stock business in almost any class or breed of stock if a man has a little ability in choosing his animals and caring for them. J. S. MONTGOMERY.

State Dairy Commissioner.

Governor Hoch has appointed Prof. J. C. Kendall, of the North Carolina Experiment Station, as State dairy commissioner. The appointment was made under the new dairy commissioner law, which makes it mandatory upon the governor to appoint a man to be nominated by the secretary of the State board of agriculture, the director of the Kansas Agricultural Experiment Station and the professor of dairy husbandry at the Kansas State Agricultural College. The new dairy commissioner is highly recommended. He is known personally to Dr. C. W. Burkett, director of the Kansas Experiment Station, and to Oscar Erf, professor of dairy husbandry of this College. They are both of the opinion that he will make a success of the work here, even though he is now unfamiliar with dairy conditions in Kansas. The position of State dairy commissioner pays a salary of $2000 a year, and the law provides that he shall maintain an office at the Kansas State Agricultural College.

We are in receipt of the announcement pamphlet of the tenth annual session of the Colorado Chautauqua and Summer School at Boulder, Colo., July 4 to August 14. The Colorado meeting is known all over America as one of the very best and most extensive educational summer gatherings. Its location is wonderfully picturesque and healthful, while the expenses for persons attending is very low. Those interested in Chautauqua work should address F. A. Boggess, Boulder, Colo. And, by the way, the pamphlet contains on page 21 the half-tone pictures of Professor and Mrs. Walters, taken while rambling along a deep mountain gorge right behind the camp.

THE INDUSTRIALIST

Published weekly during the College year by the Printing Department of the

Kansas State Agricultural College

Manhattan, Kansas.

PRES. E. R. NICHOLS.....Editor-in-Chief
PROF. J. D. WALTERS.....Local Editor
PROF. J. T. WILLARD.....Alumni Editor

Local Notes.

Miss Ethel Clemons, '05, is assisting in the Library.

The mid-term examinations for the spring term will be held on Saturday, May 11.

The Animal Husbandry Department is nursing a spring crop of 200 young pigs, of half a dozen breeds.

The sophomores gave a reception in honor of the members of the class basket-ball teams Monday evening, in Kedzie Hall.

State Senator Dolley was a visitor at College last week, and United States Senator Long was with us on Thursday of this week.

The Kansas County High School Oratorical Association will hold its annual contest in the College Auditorium on the evening of May 3.

Pres. E. R. Nichols went to Topeka Friday to consult with State Architect Stanton concerning the plans for the new Domestic Science Hall.

The librarian is relabeling all books in the general library. When her work is completed the books will stand on their shelves under their proper classification numbers and also in true alphabetical order.

Asst. Theo. H. Scheffer, of the Department of Zoölogy, will teach in the Ottawa county teachers' institute the two weeks following the close of the spring term of the College. He will give special instruction in elementary agriculture.

The International Harvester Company has decided to sell its 2-horse-power gasoline engine at present located in the Dairy Department for $80. That is for 40 per cent off on list-price. Students who are in need of a gasoline engine can well afford to investigate this offer.

Prof. J. T. Willard will lecture on April 29, in the Manhattan Congregational church, on his observations made in England, Germany and the Netherlands during a recent vacation trip. The lecture will be illustrated by a large number of fine stereopticon views and will undoubtedly be highly interesting.

Miss Clara Willis, assistant in the Department of Domestic Science, who left for a month's vacation at the close of the winter term, writes from her home at New Bedford, Mass.: "I find New England in the midst of a cold and bleak winter. Still, 'home is home,' and I am happy to be here. A month's vacation is short, but I shall be ready for work again, I am sure—glad to come back to the friends I made in Kansas."

Arrangements have been completed with the Snead & Company iron works, of Jersey City, N. J., for the furnishing of the new Library stacks. The work will be installed in July.

The Animal Husbandry Department has just received a two-year-old Aberdeen-Angus heifer, purchased of Geo. Stevenson, of Waterville, Kan., president of the National Aberdeen-Angus Association.

Supt. J. H. Miller, of the Farmers' Institute Department, visited Hutchinson, Emporia, Howard and Holton this week, interesting the commercial clubs of these cities in the boys' corn-growing contests. From each place from ten to fifteen boys will be sent to the State corn- and stock-judging school at this College next December.

Professor Cortelyou was at Chapman last Friday night acting as a judge in the contest of the Central Kansas High School Oratorical Association. The other judges were President Picken, of the Hays Branch Normal, and Prof. Lillian Scott, of Baker University. Docter Brink was one of the judges on manuscript. This contest was one of the three preliminaries to the State contest to be held in the College Auditorium May 3.

Superintendent Lund, of the Heat and Power Department, has purchased three boilers of 100 horse-power each. These boilers are second-hand, but have been used very little. They were sold by the United States Government in consequence of a change in the heating arrangements at Fort Riley, where they have been in use. The department secured these boilers, with the brick and pipe fittings, for one thousand dollars, while new boilers would have cost that much apiece. They will be installed during the summer vacation.

The Library has lately received a large number of new books, and Miss Minis and her assistants are busy cataloguing them. Among the works recently accessioned are: Murray's New English Dictionary (5 vols.), Bailey's Cyclopedia of Horticulture (6 vols.), The International Cyclopedia of Architecture and Drawing (10 vols.), and Vol. I of Bailey's Cyclopedia of Agriculture. Another interesting volume is the A. L. A. index to portraits, which indexes the portraits of noted characters in both books and periodicals. New books in scientific and technical literature are arriving almost every day.

After advertising for bids a number of times, the board of the College Y. M. C. A. have let the contract for the erection of the new building to L. E. Eversole, of Topeka. The contract price is $24,440, and the building will be substantially as planned from the start. Buff brick will be substituted for the stone range work above the water-table, and there will be a few other changes, especially in the basement. Mr. Eversole is well known in Manhattan as the builder of Kedzie Hall and of the blacksmith-shop and foundry additions to the shops of the College. He says that the work of excavating will begin in a few days.

Professor Valley has closed an engagement for a Chautauqua concert tour the coming vacation. The company is composed of the old Valley concert members, under the management of the Slayton Lyceum Bureau, of Chicago. It will consist of Professor Valley, basso; Miss Edith Adams, cello; Miss Anna Doyle, Irish reader; William Snyder, pianist. The tour will take in the most noted Chautauqua assemblies of Iowa, Kansas, Nebraska, the Dakotas, Arkansas, Missouri, Illinois, and Michigan, and will start in Iowa on June 28.

Professor Popenoe spent last week in Sedgwick county in search of the San José scale. He found it in the north half of Wichita over an area of eighteen blocks square practically in every houseyard visited. This is the most serious infestation so far found in the State. It attacks peach trees most destructively, but occurs also on fruit trees of all other sorts in that locality. He also visited some fruit farms in the southern part of the county, where he found five orchards badly infested. He will continue his inspections in other localities during the spring and summer.

Our athletes are again in the lead. Last fall they defeated the State University, the Haskell Indians, the State Normal School, Ottawa University, and a number of smaller institutions. In the winter they walked away with the State University, Missouri State University, the Fort Riley soldiers, and several other heavy teams. This spring, that is during the past two weeks, they have beaten Washburn College, Fort Riley, and the College of Emporia, and have played a very close game with the professional team from St. Paul, Minn. The score with Washburn was 6:0 and with College of Emporia 16:2.

Alumni and Former Students.

Born, to Mamie (Alexander) Boyd, '02, and Frank W. Boyd, Phillipsburg, Kan., a son, April 17; to Isabella (Frisbie) Criswell, '94, and J. H. Criswell, '89, Ames, Iowa, a daughter, April 14.

Lieut. O. G. Palmer, '87, writing from Camp McGrath, Batangas, P. I., says: "After April 20 please change the address of my paper to Ft. Leavenworth, Kan." From this we judge that he has been ordered to that post.

Dr. Chas. Eastman, '02, is again at San Luis Obispo, Cal. He has accepted an appointment in the Bureau of Animal Industry as agent in tick eradication. San Luis Obispo is a center of infection for this pest and Doctor Eastman will make that his headquarters for some time. He sends regards to all College friends.

Changes of address: Effie E. (Bailey) Foltz, '00, Zeandale, Kan.; A. W. Barnard, '05, Manhattan, Kan.; Walter O. Gray, '04, 1330 Charlotte street, Kansas City, Mo.; Belle (Selby) Curtice, '82, R. F. D. No. 10, Independence, Mo.; Jane C. Tunnell, '89, 16 Astor street, Chicago, Ill.; L. A. Fitz, '02, 1545 Ruskin Avenue, Baltimore, Md.; E. W. McCrone, '03, Haddam, Kan.; J. G. Arbuthnot, '04, 656 Third street, Portland, Ore.

S. I. Wilkin, J. C. Wilkin, and Mary E. Wilkin, former students, have moved to their Sheridan county land, near Hoxie, having sold a section of the Bow Creek ranch near Stockton, Rooks county. They extend an invitation to all good K. S. A. C. people to visit them.

H. W. Johnston, '99, had his friends guessing this week. His visit Tuesday was hurried, as the climate seemed too severe after his long residence in Texas, the snow that day being the first he had seen for three years. He is still in the employ of the Santa Fe railway at Brookeland, Tex.

M. D. Snodgrass, '06, has tendered his resignation as assistant in crop production at the Agricultural College to accept a position as agent in the office of the United States experiment station located at the Kadiak breeding station in Alaska. Mr. Snodgrass will leave June 1 for Alaska, and if the trip is made under favorable conditions it will take him fifteen days to reach his destination. Milt is an able and congenial young man of more than ordinary ability and will be greatly missed by a large number of friends in Manhattan and Riley county.—*Mercury.*

The resident alumni, in response to written notice from the association officers, met last Monday evening with Margaret Minis, '01, to consider plans for the alumni reunion next June. The outcome of the meeting was the organization of the Manhattan Alumni Association, with the following officers: President, C. M. Breese, '87; vice-president, Flora Wiest, '91; secretary, Sarah Hougham, '03; treasurer, Fred B. Elliott, '87. The association has not restricted itself by any constitution or by-laws, but all graduates of the College residing in Manhattan or vicinity were declared to be members without further action. The organization is the outgrowth of a feeling that in the immediate vicinity of the College there are about 150 graduates who are to a large extent as much strangers to each other as if residing in different parts of the State, and the desire is that we become better acquainted, not only because of the pleasure of such associations but in order that we may work together more effectively in making the general reunion of the association enjoyable to visitors from other parts of the State and other states. The Manhattan Association has undertaken to meet the expense of the coming reunion with the idea that the occasion will be informal. To meet this expense an assessment of fifty cents each was levied upon all graduates in Manhattan or vicinity, and the treasurer, F. B. Elliott, is prepared to receive these amounts at any time. As a further step in promoting acquaintance among its members this association voted to hold a picnic some time next fall, the exact time and place yet to be determined. There is no doubt that this organization will be a source of much pleasure to its members. It is strange that the comparatively few in distant cities have been ahead of us in forming a local organization. It seems that Alma Mater has had so dominant an influence that in her shadow we had not felt the need of each other.

Mechanic Arts Number

THE INDUSTRIALIST

Vol. 33 No. 26

Issued Weekly By

Kansas State Agricultural College

Manhattan, Kansas

Mechanical Engineering

E. B. McCormick

Electrical Engineering

B. F. Eyer

Architecture

J. D. Walters

Published by

PRINTING DEPARTMENT

J. D. Rickman, Supt.

Entered at post-office, Manhattan, Kan., as second-class matter. Act of July 16, 1894.

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THE INDUSTRIALIST.

VOL. 33. MANHATTAN, KAN., APRIL 27, 1907. No. 26

Mechanical Engineering at the Kansas State Agricultural College.

The act of Congress under which the land-grant colleges were established specifically calls for instruction in the mechanic arts. At the Kansas State Agricultural College this instruction is provided for in the Mechanical Engineering Department.

The class-room work of the department is supplemented by work in the shops, drafting rooms, and engineering laboratories. At the head of each shop is a foreman who is a competent workman at his trade. All young men in the College take two terms of woodwork and one of blacksmithing. Further work in the shops is optional with agricultural and general science students. Four years in the shops are required of the mechanical engineering students, three of the electrical, and two of the architectural students.

Because of the fact that the students are likely to follow widely different lines of work after graduation, the courses in shop work have been made sufficiently elastic to fit the needs of the different students. For the agricultural and general science students the courses are arranged to impart the greatest skill possible in performing the operations in the time allowed. Many of the students expect to teach, and it is therefore necessary to have the course so arranged that they may be fitted to teach manual training.

With the engineering student the aim is not so much to impart individual skill as to teach the various operations usual to each shop, together with the proper equipment and the time required for performing them. It is not essential that a mechanical engineer be able to go into a shop and do a task in the best manner and shortest time possible, but it is necessary that he be able to instruct others how to do it and to see that they follow his instructions.

In order properly to prepare the student it has been found advisable to divide the course in each shop into two parts. The first part consists of exercises in performing certain individual operations essential to that trade. These exercises, of necessity,

remain the same from year to year. The second part consists in making articles for actual use. In the carpenter-shop the students in the second term make pieces of furniture, laboratory apparatus, etc. In the foundry and blacksmith-shop they make castings and forgings for machines that later on they will help to build in the machine-shops. There are always in the course of construction in the machine-shops from two to six machines of more or less complex design, but all requiring accuracy in construction. Most of these machines have been designed in the drafting room by students as a part of their regular drawing work, or in connection with theses.

The work in drawing follows the same general arrangement as in shop work. The first part of the course is devoted to acquiring skill in handling the instruments and a knowledge of the elementary operations. The latter part of the course consists of graphical solutions of engineering problems, the design of engine and machine parts, and in the fourth year the design of a complete machine, of a power plant, or of an engineering structure. The fourth-year problem in design is varied from year to year to such an extent as, in the judgment of the instructor, is desirable to meet the individual requirements of the students and to bring before the class timely subjects. The last legislature appropriated eighty thousand dollars for the erection of a mechanical engineering building. The fourth-year students are now working on the design of a power plant for this building. The work includes the selection of boilers, heaters, pumps, etc.; the design of the steam and water piping; the design of a mechanical draft system, and of a chimney for natural draft; and the design of a modern coal-handling plant. The problem also includes the design of that portion of the building containing the power plant; not only the arrangement of the floor plan, but also the design of floors, beams, walls, and columns of sufficient strength to withstand the weight of the machines and the vibrations due to their operation.

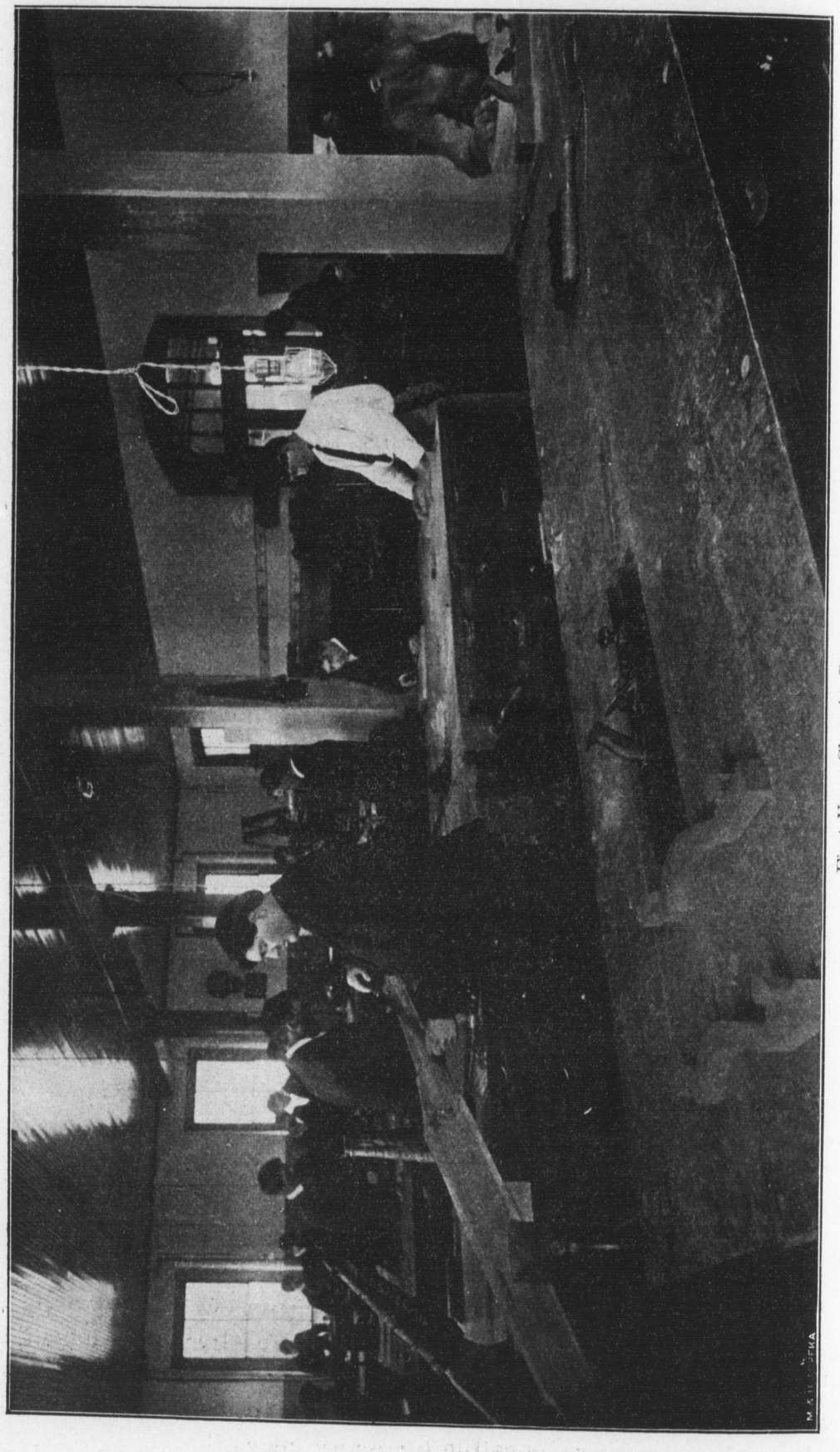
In the fourth year of the course each student selects a thesis which consists of work in design, construction, or testing, or in a combination of any two or all three of these. The theses are carried on under the supervision of the instructors, but the students are encouraged to overcome for themselves the obstacles encountered. This method has been found to give the student self-reliance and to fit him successfully to meet the problems that will arise later on in his work. A wide range of subjects is permitted in the selection of theses. Oftentimes the same subject is taken by students of different years.

For the past two years tests have been carried on to determine the strength and fire-resisting qualities of cement building blocks. This work is being continued this year and is supplemented by tests to determine materials suitable for use in coloring these blocks, and also materials adapted to waterproofing the walls of cement-block buildings. Some of the class of 1905 carried on tests on a traction-engine to determine the horse-power available under different conditions, and the amount of coal and water required for the different horse-powers obtained. Two of last year's class designed and partially built a recording traction dynamometer that will measure and record the force exerted by a team of horses or a traction-engine in pulling a load. The construction of this machine has been completed, and two of the members of this year's class will use it in determining the force required to pull loads on roads of different construction, such as dirt roads, oiled roads, and macadam roads; also comparative force required on level stretches and on grades. There is also being carried on this year a series of tests on the strength of full-size reinforced concrete beams. In order to make these tests it has been necessary to design and install considerable large apparatus. This has been done by the students who are carrying on the thesis.

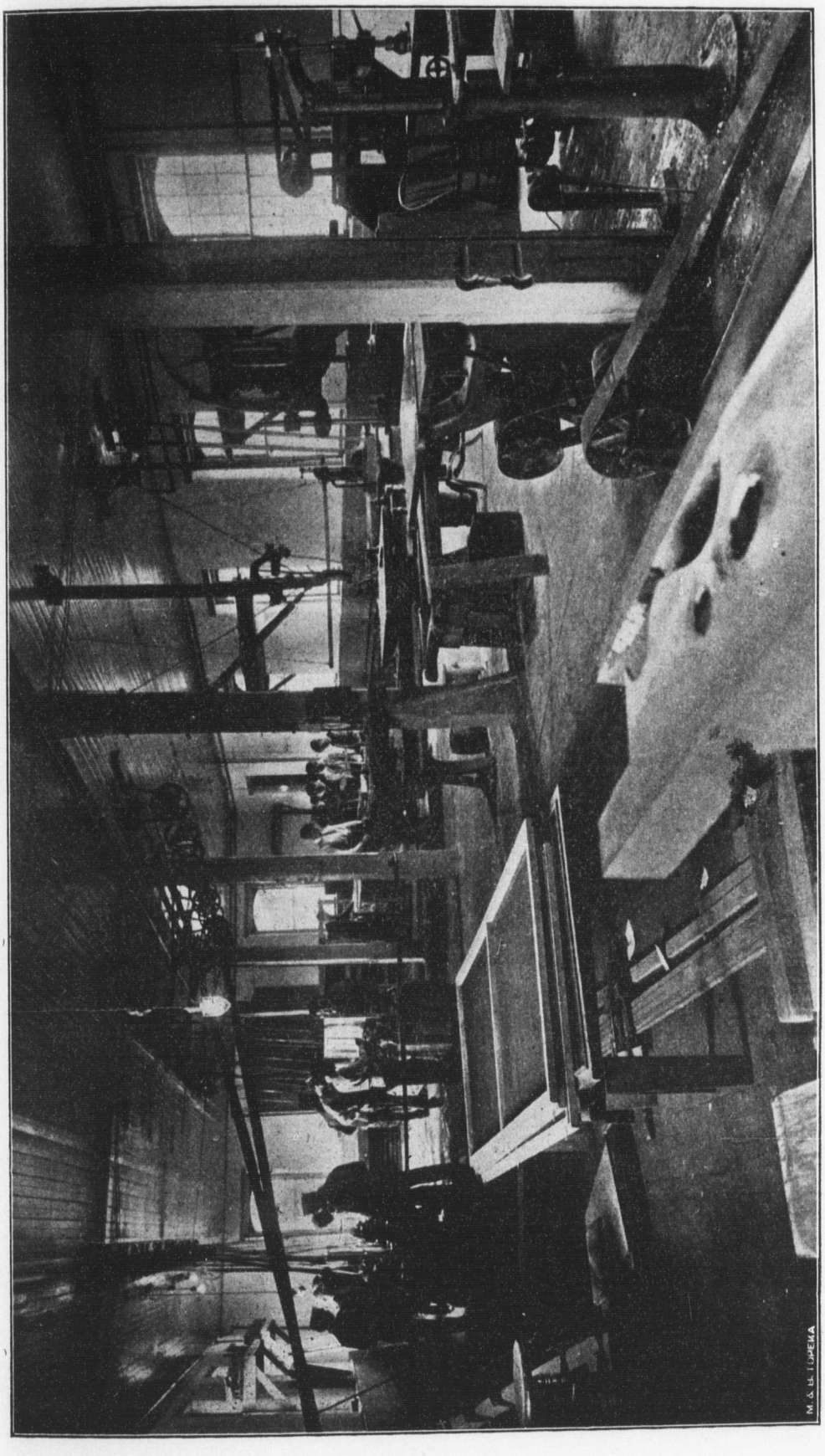
The lines of employment open to graduates of a course in mechanical engineering are many and varied. For the past few years the demand has been far in excess of the supply. Manufacturers of steam-engines and boilers, gas engines, steam turbines, electrical machinery, refrigerating machinery, and hydraulic machinery, and the motive departments of many railroads, regularly employ several mechanical engineering graduates each year whom they promote to positions of importance in technical or executive lines as soon as the requisite ability is shown. Of the mechanical engineering graduates of this school some are with railroads, some in steam-engine and steam-turbine work, others with refrigerating firms, and some in drafting rooms. A few are teaching. The positions range from special apprentices (in the case of some recently graduated) to superintendents, foremen, erecters, and designers.

E. B. McCORMICK,
Professor of Mechanical Engineering.

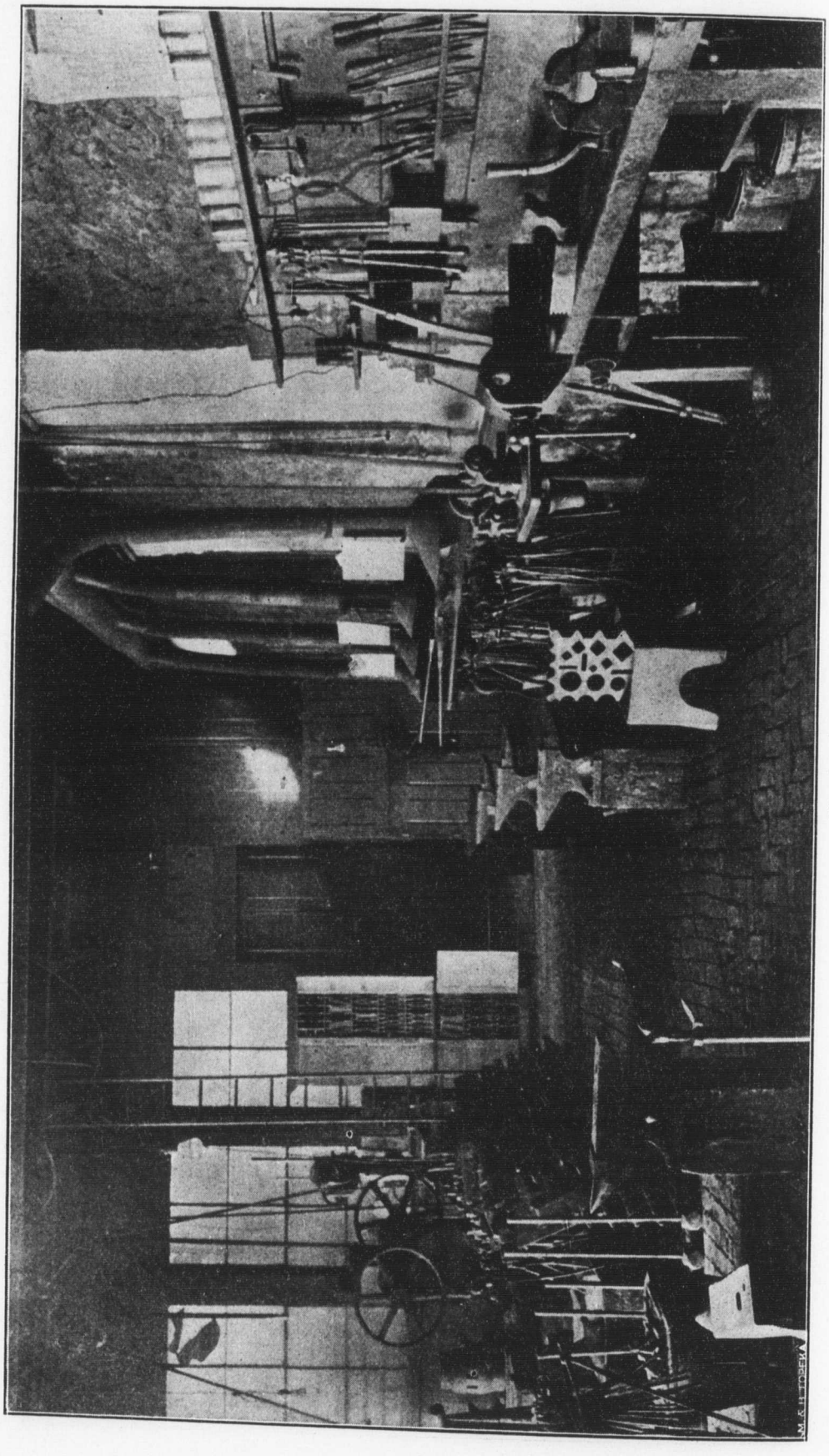
"The unskilled laborer reaches a maximum earning capacity at twenty-two, the shop-trained, at twenty-four, the trade school, at thirty-one, and the technical graduate practically never reaches a maximum. His thorough training to use brain and brawn and books makes progress possible for many years."



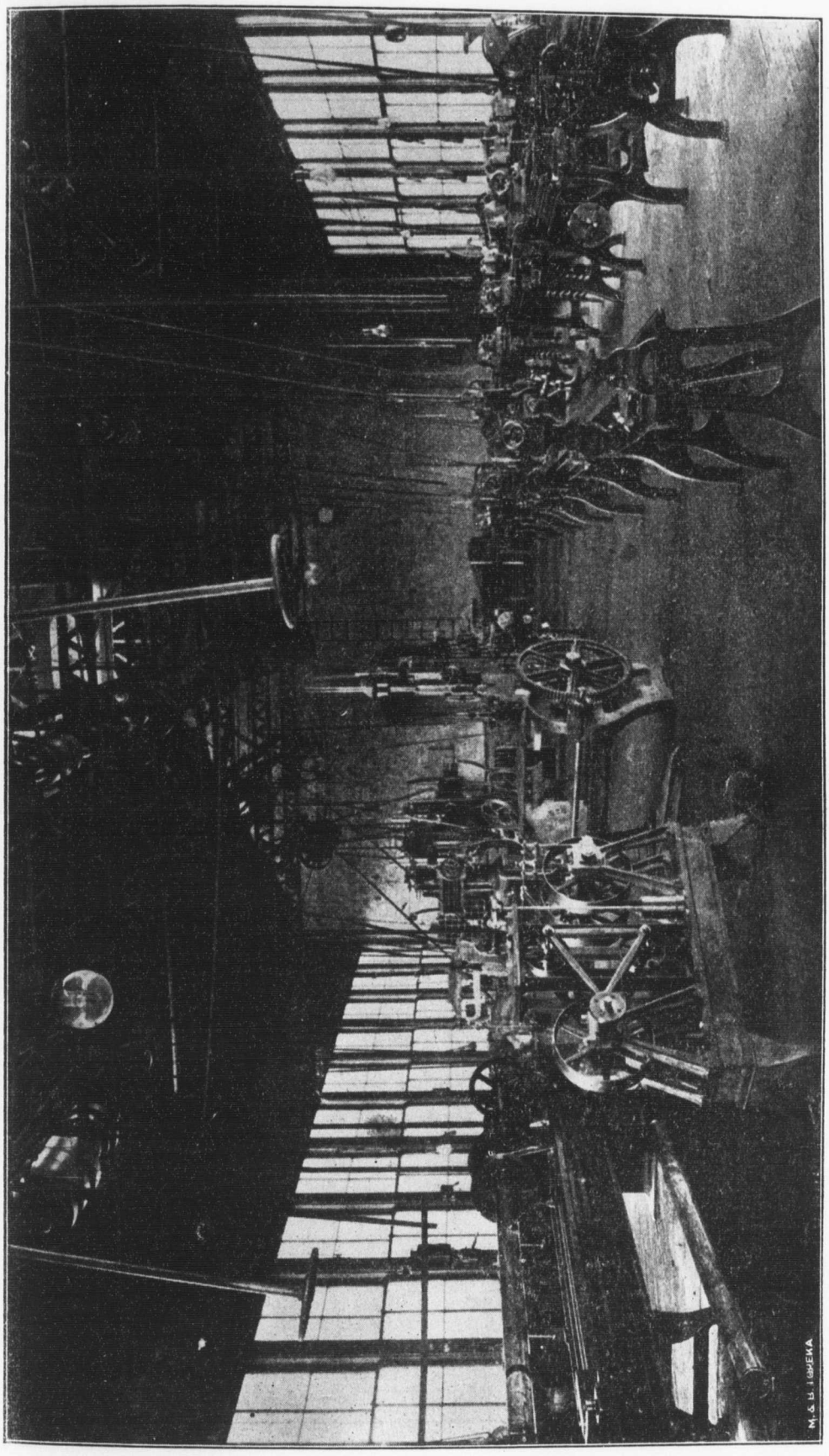
First Year Class in Carpentry.



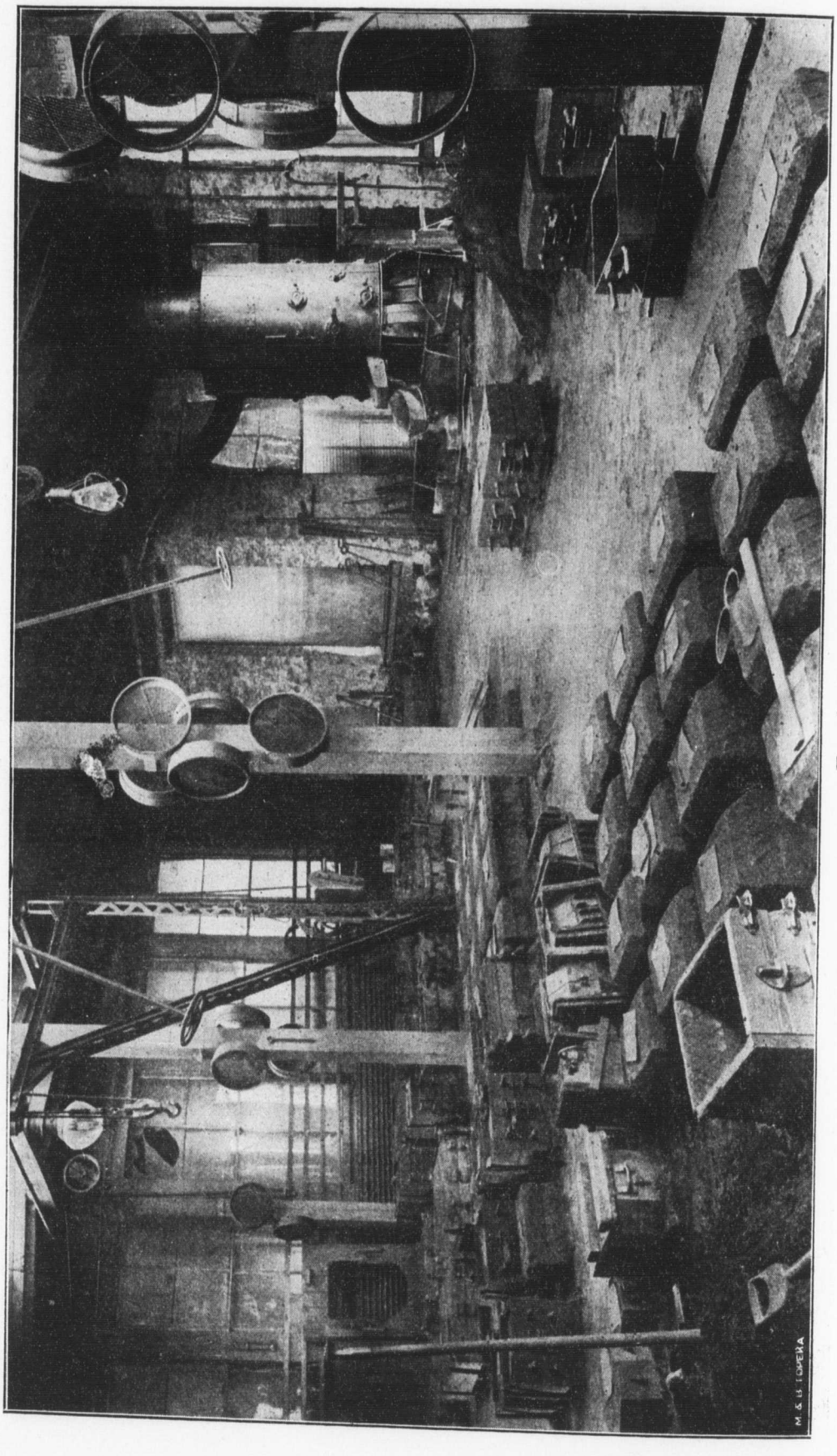
Class in Pattern Making.



Blacksmith Shop.



Machine Shop.



Foundry.

Electrical Engineering at the Kansas State Agricultural College.

In view of the rapid development of this branch of engineering, the preparation of young men for the work of electrical engineering is a matter of much concern to every technical college and has required a careful adjustment of the course of instruction. The technically trained engineer of to-day is required not only to know the fundamental principles of engineering, but must be able to "do things," to know how to attack the practical problems as they arise and to solve them correctly, and to be able to use with accuracy the different measuring and testing instruments so essential to successful engineering. In the present state of engineering none but the carefully trained man can hope to achieve the highest success. This training he must get in college or by his own efforts. Few, however, have the persistence or the time necessary to succeed without judicious direction and assistance. The course in electrical engineering at the Kansas State Agricultural College provides as broad a fundamental training as can be given in the four-years' course and maintain the standard required for the special work of electrical engineering.

Let us follow the young men who have elected this course as they enter the freshman year at the Kansas State Agricultural College. They have no very definite knowledge of the preparation required of one electing this course. Instead of entering immediately upon the study of electricity, they are required to spend two years after entering as freshmen in the study of mathematics, drawing, English, chemistry, and physics. Their afternoons are spent in the shops and drawing rooms. Woodwork, blacksmithing, iron moulding and machine-shop work are given as afternoon industrials. Here they become familiar with the different processes of wood and iron working, and acquire skill in the use of tools.

At the beginning of the junior year they begin the study of electricity. The class-room lectures and discussions are supplemented by afternoon work in the junior electrical laboratory. This laboratory is well equipped with all the necessary instruments to measure magnetic and electrical units. Ammeters, voltmeters, galvanometers, Wheatstone bridges, batteries, etc., are provided for the different experiments. Here the men are required to spend two afternoons per week working out problems in the measurement of current, potential, resistance, capacity, inductance, etc., and the different methods by which this may be done, with a view of differentiating them with respect to accuracy.

the Department of Agriculture, Washington, D. C. The professor complimented the College on its large and fine looking graduating class, the many substantial buildings, the beautiful campus, the standing and recognition of the institution among the agricultural colleges of the country, and the liberal legislative appropriations which it had received last winter. He also congratulated the graduates for living in the twentieth century instead of fifty years ago, when Latin and Greek were supposed to educate a man for his life work. He expressed the hope that the future college would do still more for its students, and read a newspaper extract entitled "College Education has no Commercial Value," which statement he emphatically denied. The farmer, he said, forms the chief renewing element of the life of the Nation, but as an individual he must have education to fulfil this mission. He must have an education in order to make a good citizen and in order to hold his own financially. He pronounced farming a good business —a well-paying business—and said that farmers, though they grumble much, would not trade with any other class. The wealth of the Nation consists chiefly in its farms, and the exports of America consist chiefly in agricultural products. Of these facts there is no doubt—statistics can prove them.

There is another question, however, which should be answered: the question, Is agriculture a good business for a young man? In the past educated men often failed on the farm. Hundreds of professionists tried farming and ended with financial ruin because the "old education" was poor training for this business. It is not so now. Farming has changed its character. It is not all drudgery and economy, now; it is knowledge and science mixed with work and enterprise. Education, too, has changed. It is more practical now. The two have come closer together and have met each other. Higher education is no longer classical. The last twenty-five years have transformed the curriculum of the American College. The land-grant institutions founded by act of Congress in 1862 took the lead in this revolution, and the older universities had to follow. The up-to-date farmer, more than any other business man, is in constant contact with the professional scientific experiments, and what is true of the United States is true of Canada and the countries of central and northern Europe.

The governments foster this attitude of the modern farmer. They employ the best talent that can be found for the purpose of assisting agriculture with positive statistics and practical scientific deductions. Farmers' institutes are being held in every state to give practical information to the tillers of the soil. Twenty-one

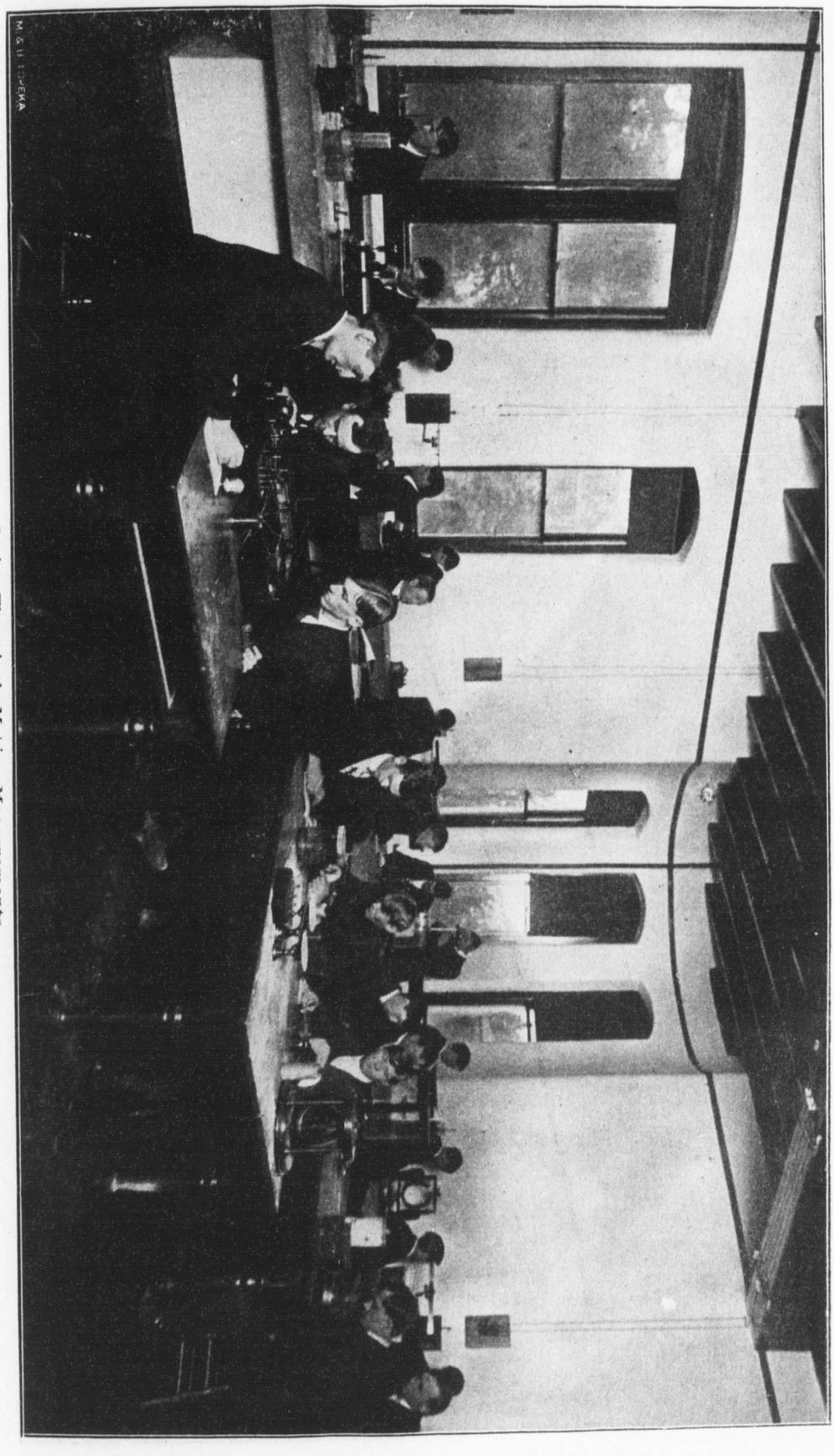
The latter part of the year is devoted to a study of calibration by means of the Kelvin balances, the potentiometer, and the Carey-Foster bridge. Measurement of candle-power by means of the photometer and some preliminary experiments with direct current dynamos and motors are given during the latter part of this year.

The junior engineer now feels some confidence in his ability to measure electrical units, and is ready for the work of the senior year. Direct and alternating current types of machines, power stations and machine design are the topics for lectures and discussions in the class room, followed by a course of experiments in the dynamo laboratory. In this laboratory there are some fourteen different types of electrical machines, including a 26 horse-power direct-current Crocker-Wheeler motor, a 15 kilowatt Westinghouse generator, a 15 kilowatt alternator, a 7½ kilowatt rotary converter, an 8 horse-power Stow direct-current motor, a 2 horse-power Bullock generator, a 15 horse-power Sturtevant direct-current motor, a Pelton water-wheel, single and three-phase induction motors, etc. Various types of transformers are provided for testing purposes, among them one 60,000-volt transformer and a 6-light constant current transformer. Two switchboard panels are installed in this laboratory, one a neat marble panel for the generators and rotary converter, equipped with ammeters, voltmeters, wattmeters, a synchronizer, and a Tirrill regulator; the other a slate panel made by the students for a 60-cell storage battery.

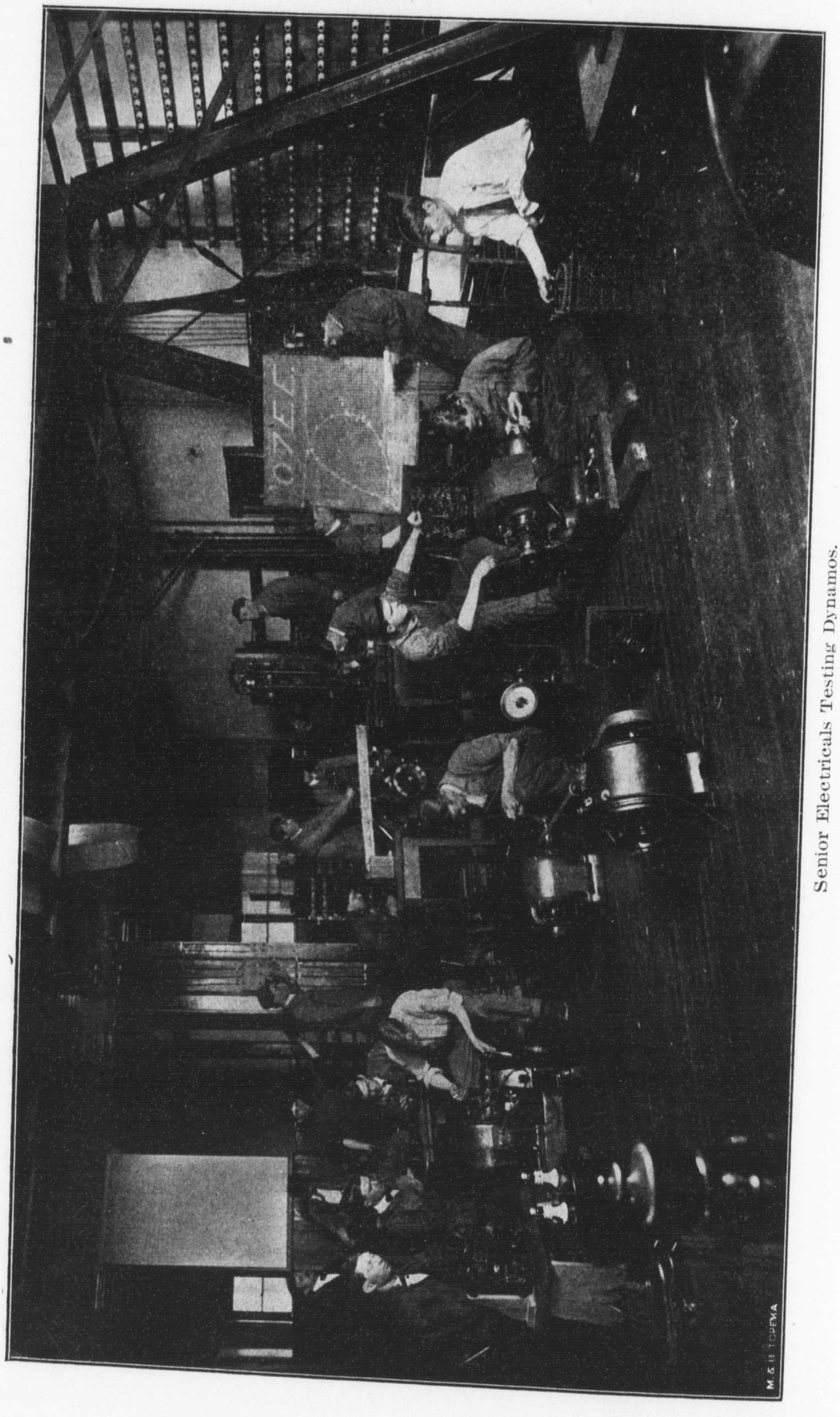
With this equipment the young men are given an excellent opportunity to study switchboard and machine design, machine characteristics and efficiency, and some problems in actual plant operation. Inspection visits are made during the senior year to power stations of importance outside of Manhattan.

Each student is required to make all instrument and machine connections himself for the different tests in which he may have a part. In this way he becomes thoroughly familiar with the different motor and generator connections and the proper methods of connecting in wattmeters and other instruments to get desired results.

It would seem that with the increasing number of graduates from the technical schools there would be an over supply of men. This has not been the case. On the contrary, well-prepared men who can think and act according to the laws of mathematics and engineering are in demand. The best concerns employing trained men plainly state that they are looking for men who can sooner or



Junior Electricals Making Measurements.



Senior Electricals Testing Dynamos.

later be given responsible places in their employ, or who can become operators of central stations or engage in the work of construction and installation of power plants.

The course in electrical engineering was established in the Kansas State Agricultural College in the year 1899. The graduates from this course are now filling responsible places with the various leading companies of this country, among them the General Electric Company, the Westinghouse Electric and Manufacturing Company, the Bullock Electric Company, the Western Electric Comyany, and others. In the electrical engineering class of '07 there are nineteen candidates for graduation. Of this number seventeen will engage with the different electric manufacturing companies, street railway companies, and the electrical departments of railroads.

B. F. EYER,
Professor of Electrical Engineering.

Architecture at the Kansas State Agricultural College.

The course in architecture was organized in 1904, in response to a long-felt want. There had not been a term during the preceding twenty years without applicants for architectural studies, and many students had been given special instruction in architectural drawing and history of art in the Department of Industrial Art and Designing. These students, although only partly prepared for their chosen work, found ready positions at high remuneration in architects' offices, structural iron shops, planing-mills, and stone yards. They rose rapidly and urged the College to organize a professional course to assist the younger generation of students in making the ascent. One alumnus wrote from New York that he, as the chief superintendent of construction of a leading building firm, had just erected the largest office building in the world, a building costing over three million dollars, and that he wished he could have taken more professional work in this particular line while at College.

The Board of Regents felt, too, that a great technical school like the Kansas State Agricultural College should lend a helping hand in the correct and speedy upbuilding of the profession which, more than any other, is responsible for the artistic and sanitary conditions of our cities and individual homes. They felt that a great State school like this should assist in the development of the various resources of its territory, and that there is not a country in the world that possesses greater possibilities in the production of modern building material, such as cement, glass, straw, brick, salt, lead, zinc, and stone. They felt that the indus-

trial schools of a people are an index of its progress and prosperity, and that in time the new course in architecture would become a great factor in the growth of the State.

The new four-year course was put in operation in the fall of 1904, with seven juniors and one senior enrolled in its classes. In the fall of 1906 there were nine juniors, seven special students and four seniors, three of whom will graduate. The graduates have found positions readily; in fact, there is danger that the many chances of getting remunerative work at the drawing table all over the country will draw students away from the course before its completion. The College is well equipped to maintain a course in architecture. It owns fine collections of building materials, models, plaster casts, blue-prints, and a rapidly growing library of modern books on art, architecture, and building engineering.

The freshman and sophomore years of the course are identical with those of the engineering courses and comprise vigorous work in mathematics, drawing, surveying, physics, kinematics, English, and German, supplemented by practice in the carpenter-shops, the machine-shops, and the foundry. The junior and senior years are given to advanced work in the lines named, supplemented by theoretical and practical work in perspective and rendering, building construction, clay and plaster modeling, specifications and estimates, architectural drawing, and architectural composition.

The following schedule shows the number of class hours given to each branch during the junior and senior years:

	Hours.
Architectural composition (original work)	188
Architectural drawing	264
Art lectures	60
Calculus	150
Geology	60
Graphic statics	30
Heating and plumbing	30
History, civics, and economics	240
Home architecture	30
Linear perspective and rendering	48
Modeling in clay and plaster	48
Mechanics, pure and applied	90
Physics and physics laboratory	216
Rhetoric and English literature	120
Roofs and trusses	60
Specifications, estimates and contracts	60
Thesis	60

Students taking the architectural course are required to devote their summer vacations to practical work in actual building operations.

J. D. WALTERS,
Professor of Architecture and Drawing.

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THE INDUSTRIALIST.

VOL. 33. MANHATTAN, KAN., MAY 4, 1907. No. 27

The Uses of Denatured Alcohol.

In a previous article the manufacture of alcohol and its denaturing were treated in a simple way. It was there brought out that denatured alcohol is ordinary alcohol, that is, ethyl or grain alcohol, to which some substance has been added that is of such a nature as to prevent the use of the mixture as a beverage or in internal medicine. The uses for which such mixtures are available are numerous, though of course not as many as the unmixed alcohol can and would be put to were the price determined by the cost of production rather than by the internal revenue tax.

In addition to its presence in beverages and its use as a medicine the chief uses of alcohol may be grouped under three heads, *i. e.*, as fuel, as a solvent, and as the starting point for the production of chemical substances derived from it or including within their molecular structure all or part of the alcohol molecule. As a solvent the effect of the denaturing agent upon the solution must be considered, and in many cases the denatured product will be altogether unavailable, even if legal. The chief uses of alcohol in medicine are not those in which its specific physiological effect is sought, but rather those in which advantage is taken of its solvent power. Many vegetable substances insoluble in water dissolve readily in alcohol. Such solutions are the tinctures of the pharmacist. Independent of the fact that the law does not permit the use of denatured alcohol in medicines for internal use, it will be seen that it could not be used because of the presence of the denaturing agents in the product, which would have nauseating and poisonous effects.

Among other solvent uses of alcohol is its employment in varnishes. The gums and resins used therein require a volatile non-aqueous solvent, and here the denatured alcohol, by proper choice of denaturing agents, will probably be nearly as suitable as pure grain alcohol and much better than ordinary wood alcohol, that has been used hitherto to a certain extent. The use of denatured alcohol ought to reduce the price of varnishes, but it is not likely that the influence of such a reduction will be felt in the price of pi-

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C. O. Swanson, M. Agr. (Minn.).....Assistant Chemist, Experiment Station
Herbert H. King, M. A. (Ewing College).....Assistant in Chemistry
Edw. C. Crowley, Ph. B. (Yale).....Assistant in Chemistry
Hugh Oliver.....Assistant in Heat and Power Department
Miss Charlaine Furley, B. A. (Fairmount).....Assistant in Preparatory Department
Miss Jessie Reynolds, A. B. (K. U.).....Assistant in Preparatory Department
Miss Anne M. Boyd, A. B., Lib. Sci. (Jas. Millikin Univ.).....Assistant Librarian
D. M. Wilson.....Assistant in Dairy Husbandry
Leland E. Call, B. S. (Ohio State University).....Assistant in Agronomy
Miss Mary F. Nesbit, A. B. (Illinois University).....Assistant in Mathematics
Miss Annette Leonard, A. B. (K. U.).....Assistant in English
William C. Lane, B. S. (K. S. A. C.).....Assistant in Physics
William R Lewis.....Janitor

THE INDUSTRIALIST.

VOL. 33. MANHATTAN, KAN., MAY 4, 1907. No. 27

The Uses of Denatured Alcohol.

In a previous article the manufacture of alcohol and its denaturing were treated in a simple way. It was there brought out that denatured alcohol is ordinary alcohol, that is, ethyl or grain alcohol, to which some substance has been added that is of such a nature as to prevent the use of the mixture as a beverage or in internal medicine. The uses for which such mixtures are available are numerous, though of course not as many as the unmixed alcohol can and would be put to were the price determined by the cost of production rather than by the internal revenue tax.

In addition to its presence in beverages and its use as a medicine the chief uses of alcohol may be grouped under three heads, *i. e.*, as fuel, as a solvent, and as the starting point for the production of chemical substances derived from it or including within their molecular structure all or part of the alcohol molecule. As a solvent the effect of the denaturing agent upon the solution must be considered, and in many cases the denatured product will be altogether unavailable, even if legal. The chief uses of alcohol in medicine are not those in which its specific physiological effect is sought, but rather those in which advantage is taken of its solvent power. Many vegetable substances insoluble in water dissolve readily in alcohol. Such solutions are the tinctures of the pharmacist. Independent of the fact that the law does not permit the use of denatured alcohol in medicines for internal use, it will be seen that it could not be used because of the presence of the denaturing agents in the product, which would have nauseating and poisonous effects.

Among other solvent uses of alcohol is its employment in varnishes. The gums and resins used therein require a volatile non-aqueous solvent, and here the denatured alcohol, by proper choice of denaturing agents, will probably be nearly as suitable as pure grain alcohol and much better than ordinary wood alcohol, that has been used hitherto to a certain extent. The use of denatured alcohol ought to reduce the price of varnishes, but it is not likely that the influence of such a reduction will be felt in the price of pi-

anos, brass beds, picture frames, hats, toys, furniture, and the many other articles in the manufacture of which varnishes and lacquers are used.

The nitro-celluloses are an important class of substances used in the manufacture of celluloid, xylonite, and smokeless powders. They are not soluble in water, but dissolve in various mixtures of organic substances of which alcohol is a constituent. It is expected that the cost of the products named will be much diminished by the use of denatured alcohol.

Among chemicals made from alcohol are ether and chloroform. These have industrial as well as medicinal uses, and for these purposes doubtless denatured alcohol will serve as their source. For medicinal use the pure alcohol must be used in their preparation, or the alcohol must be denatured by mixing it with some substance used in the subsequent process of manufacture. For example, in France alcohol to be used in the manufacture of chloroform may be denatured by mixing chloride of lime, bleaching powder, with it, that being the substance with which the alcohol is treated in making chloroform from it. By the terms of the supplementary act passed at the last session of Congress provision is made that "Domestic alcohol, when suitably denatured, may be withdrawn from bond without the payment of internal-revenue tax and used in the manufacture of ether and chloroform and other definite chemical substances where said alcohol is changed into some other chemical substance and does not appear in the finished product as alcohol."

The same act also made provision for the establishment of central denaturing bonded warehouses other than those of distilleries, and for receiving cisterns or tanks for use in connection with distilleries of a daily spirit-producing capacity not exceeding one hundred proof gallons. These additional provisions will add greatly to the usefulness of the original law and make it possible for small distilling establishments to be operated.

In the manufacture of dyes, alcohol is much used both as a solvent and as a source of certain atomic groupings. The preëminence of Germany in the manufacture of dyes is by many attributed largely to her liberal attitude toward industrial alcohol. Our recent change will doubtless assist the development of the manufacture of dyes in this country, but so many other factors are involved that prophecy as to the outcome is not safe.

Ethyl alcohol enters as an essential constituent into many of the synthetic flavors and perfumes. It is also a solvent for them. As these are of a very sensitive character, their attractive qualities

being easily impaired, it is likely that it will be found impracticable to use denatured alcohol in their preparation unless special denaturants are devised and permitted.

In discussing the use of denatured alcohol as fuel the latter term will be used in its broad sense, including all cases in which the alcohol is burnt, whether the ultimate object be heat, light, or power. It is in this large field that denatured alcohol is expected to find its greatest application, as here the materials for denaturing need not interfere with its utilization. The spirit lamp is probably the best known means of using alcohol as fuel in this country, and within the memory of most of us this has been limited to the production of heat for minor household purposes, and in laboratories not supplied with gas of any kind. In its combustion, alcohol, or the same denatured by wood alcohol, produces a hot, clean flame nearly or quite odorless. It lacks draft and concentration, though special devices exist that are said to correct this satisfactorily. Denatured alcohol will certainly be much used for heating in the household where convenience and freedom from smoke are greater considerations than somewhat higher cost.

The flame produced by burning alcohol is almost non-luminous. It is evident that it cannot be used alone for illumination. In lighting by means of alcohol a mantle is used of the same kind as that used with natural gas, or with other feebly luminous gases. The mantle is hung so that it is heated by the flame of the burning alcohol, and this causes it to emit a brilliant white light that is unexcelled. This essential feature of the lamp is mounted in various ways, producing lamps of high artistic value as well as those that are purely utilitarian. In Germany these compete successfully with kerosene lamps as to cost for lighting.

Much is expected of denatured alcohol as fuel for internal combustion engines. These operate something like steam-engines, but, instead of depending upon steam for the motive power, the pressure upon the piston of the cylinder is produced by the explosion of a mixture of air and some combustible vapor, ordinarily that of gasolene in this country. The engine is so constructed that after starting it automatically produces the vapor from the liquid, mixes it with air, and explodes the mixture at the proper time to apply the force to the piston. Gasolene has an advantage over alcohol in being more easily volatilized and in furnishing considerably more energy gallon for gallon or weight for weight. Other conditions enter into the problem of comparing these two fuels, however. The explosive mixture of alcohol vapor and air may be submitted to a much greater compression than the mix-

ture of gasolene vapor and air, as in the latter case there is danger of premature ignition. On this account a greater percentage of the total energy is utilized in the case of alcohol than in that of gasolene. French experimenters have found that 38 per cent of the energy of 90 per cent alcohol is utilized against only 20 per cent of that of gasolene or petroleum. This brings the total availability of alcohol about up to that of gasolene, and to compete successfully with gasolene it would need to be sold at about the same price, unless other conditions than that of energy determine the choice made.

As a further comparison of alcohol with other sources of heat, the following table is presented:

	Cost.	Cost per lb., cents.	Calories per gram.	Calories for 1 cent.
Wood, 20 per cent water.	$5.00 per cord	.167	2.8	7620
Bituminous coal	4.25 per ton	.213	7.5	16009
Anthracite coal	12.50 per ton	.625	6.0	4354
Gasolene, Sp. Gr., .68	.14 per gal., 5⅔ lb.	2.470	10.0	1846
Kerosene, Sp. Gr., .80	.11 per gal., 6⅔ lb.	1.650	10.0	2753
Coal Gas	1.50 per 1000 cu. ft	3.100	20.0	2927
Alcohol, 90 per cent.	.50 per gal., 7 lb	7.140	6.4	404
Electricity	.15 per kilowatt hour.			57.4

In calculating the above table a cord of wood has been taken as 3000 pounds. The weight would vary greatly with the straightness and size of the sticks. With the exception of alcohol and coal gas, the prices assumed are approximately those prevailing in Manhattan at the present time. Denatured alcohol can be bought by the barrel, f. o. b. Peoria or Chicago, Ill., for thirty-three cents per gallon. The retail price would also have to cover freight, cost of handling, risk, and profit. Probably as low a price as fifty cents a gallon could be made only if the trade was large. The calorific data chosen for the several fuels are those which seemed best entitled to adoption, but it should be said that there is much room for addition to our knowledge concerning them.

J. T. WILLARD.

The E. B. Purcell Trading Company, of Manhattan, has offered a prize of a neat set of gardening tools for the boy or girl who has the best flower-bed in the large city school garden plot being superintended by Professor Scheffer. Another set of gardening tools has been offered by Fielding & Sons for the best vegetable garden. These prizes are well worth working for and should add to the interest already being taken by the boys and girls in their gardening.

Manhattan Road Convention.

Last year the Manhattan Commercial Club offered a series of prizes to stimulate the good-roads movement and the use of the road drag. These prizes, amounting to $150, are as follows: Fifty dollars for the best mile and twenty-five dollars for the second best mile of dragged road within seven miles of Manhattan; ten dollars for the best half-mile and five dollars for the second best half-mile of dragged road on each of the mail routes out of Manhattan. The farmers have responded with a goodly number of contestants.

As the time for awarding these prizes approached the Commercial Club concluded it would be the proper thing to hold a good-roads meeting. An invitation was extended to the Manhattan Grange to help carry out the plan. The Grange consented and has invited the other granges of the county to assist. May 15 was set for the date of the convention and awarding prizes. An interesting program has been arranged jointly by the two organizations, as follows:

Called, 1:15 P. M.
Music.
Address, "Oiled Roads," Prof. Albert Dickens, of the Agricultural College.
Ten-minute talks, A. Munger and A. Docking.
Short talks by contestants on "What I have learned about road making," and discussion by Geo. K. Brenner, Geo. B. Collister, Josiah Richards, C. W. Emmons, Alf Worrel, John M. Kimball, W. J. Griffing, R. A. Willis, C. W. Huse, W. R. Yenawine, C. R. Ingraham, J. W. Selvidge.
Address, Clarence A. Skinner, secretary State Good Roads Association.
Address, I. D. Graham, of the *Kansas Farmer*.
Music.

The convention will be held in Commercial Club Hall, and all interested in good roads are invited to be present.

K. S. A. C. Weather Report for April, 1907.

The mean monthly temperature for April, 1907, was 46.6°, which was 4.5° below normal. There have been but three colder Aprils in the past 49 years, the coldest being 1873, when the mean temperature was 46°. The mean maximum temperature was 60.5°, the mean minimum was 32.8°, which is the lowest average minimum temperature on record at this station. The maximum temperature was 83° on the 24th, and the lowest minimum was 19° on the 13th, which is the lowest temperature for April since April 1, 1899.

There were 18 clear, 4 partly clear and 8 cloudy days. The

total rainfall for the month was 1.35 inches, which was 1.23 inches below normal. The greatest rainfall for 24 hours was on April 29. Thunder-storms occurred on the 15th and 29th.

The run of wind for the month was 7965 miles, the greatest for 24 hours being 588 miles, on the 24th.

The mean barometer for the month was 28.91; the highest, 29.34, came on the first and the lowest, 28.45, on the 5th.

All fruits in this section, except some of the berries, were killed on the 13th, and the continued cold weather has retarded the growth of all vegetation.

The rainfall, .75 inch, on the 29th was the first of any consequence since March 9.

To the K. S. A. C. Alumni:

I wonder if the graduates of the greatest agricultural college in the world really know that they have an "Alumni Journal?" Such a publication does exist—a monthly magazine most ably edited and devoted exclusively to the interests of the alumni, and having a mailing list of some 600 or more. A mere handful of our number, some 300 out of 1200 graduates who have passed out into the world, actually subscribe for this breezy little journal and receive it regularly. Where are the ninety and nine? Of this small number of actual alumni subscribers some have been heard to remark that they would be willing to put up $10 per year rather than lose the many interesting things which our editor gathers together for us from month to month.

The *Jayhawker*, which name our publication bears by inheritance, is edited and managed as a strictly private enterprise, although by vote at our last annual meeting it was officially adopted to the extent that the editor could call it the alumni journal. This action, however, gives no assistance in overcoming the financial problem of running such a paper. The high quality of work which is being put into this publication is worthy a much larger subscription list, and a larger circulation of the paper is necessary for the securing of greater advertising patronage, the chief source of income of any publication. A larger income will enable the editor to carry out many plans for the enlargement and improvement of the paper.

I cannot bring myself to believe that any large proportion of our number are so selfish and forgetful as to have lost all interest in the many friends and incidents which made our College days the happiest of our lives. While this feature of keeping in touch

with our dearest friends and associations is alone sufficient reason for subscribing for our alumni journal, there is a still broader thought in that our pride in the future welfare of our Alma Mater should spur us on to keep so closely in touch with each other that we may as a body be ever on the alert for whatever may advance her interests. Let us rally to the support of our official publication. The few who now receive the *Jayhawker* take a deep interest in this matter, and you who do not will be just as enthusiastic if you once make a start and get in touch again with old friends and associations through the medium of our alumni journal.

G. C. WHEELER,
President Alumni Association.

Law Concerning Public Highways.

An Act to create a highway commission for the State of Kansas, and defining the duties thereof.

Be it enacted by the Legislature of the State of Kansas:

SECTION 1. *Highway commission—duties.* That the Kansas State Agricultural College, at Manhattan, shall act as a highway commission, whose duties shall be (1) to devise and adopt plans and systems of highway construction and maintenance suited to the needs of the different counties of the State, and conduct demonstrations in such highway construction of county commissioners, township trustees, road overseers, students of the College, and others. (2) To disseminate information and instruction to county commissioners, and other highway officers who make request, to answer inquiries and advise such commissioners and officers on questions pertaining to highway improvements, construction, and maintenance, and when the county commissioners of a county adjudge that the public necessity requires a public demonstration of improved highways construction or maintenance in said county, and so request, and agree to furnish necessary tools, help and motor power for same, the commission shall furnish as soon as practicable thereafter a trained and competent highway builder for such demonstration free to the county. (3) To formulate reasonable conditions and regulations for public demonstration, and to promulgate advisory rules and regulations for the repair and maintenance of highways. (4) To keep a record of all the important operations of the highway commission, and report same to the governor at the close of each fiscal year.

SEC. 2. *In effect.* This act shall take effect after publication in the statute-book.

THE INDUSTRIALIST

Published weekly during the College year by the Printing Department of the

Kansas State Agricultural College

Manhattan, Kansas.

PRES. E. R. NICHOLS.....Editor-in-Chief
PROF. J. D. WALTERS.....Local Editor
PROF. J. T. WILLARD.....Alumni Editor

Local Notes.

The interclass field meet will be held to-day (Saturday) in the Athletic Park.

Professor Dickens went to Topeka last week to consult with the authorities about needed improvements of the state-house grounds.

Regent Story and President Nichols will go to Hays on Monday to inspect the College Experiment Station and to let the contract for the new $4000 barn.

Director Burkett, of the College Experiment Station, will speak May 9 before the Federation of Women's Clubs on "Civic Improvement a Woman's Problem."

Miss Ada Rice, instructor in the English Department, acted as one of the judges on thought and composition at the Norton county high school oratorical contest.

Prof. W. H. Beal, of the office of Experiment Stations, Washington, D. C., is here inspecting the work of the College Experiment Station. He will probably remain for a week.

The College baseball nine met Missouri University on Thursday afternoon in the Athletic Park. The contest was hot and the enthusiasm great. The result was 5:2 in favor of the home team.

Professor Eyer, Superintendent Lund and several students in the Electrical Engineering Department at the College made a trip to Junction City Monday to test the electric power plant at that place.

Professor Popenoe visited about twenty large orchards in Shawnee county last week to look for the San José scale, but reports that so far he has been unable to find infested trees in that county.

Dr. C. W. Burkett is a widower. His wife left for Columbus, Ohio, last week to visit relatives before starting on their contemplated trip to Europe. Doctor and Mrs. Burkett will leave New York about June first.

Mrs. T. F. Barbour, who has spent the past five weeks in the city, the guest of her daughter, Miss Marguerite Barbour, director of the Physical Training Department, left Thursday for her home in Minneapolis, Minn.

Spuhler & Brinkman have been asked to prepare the plans and specifications for the new Christian church, which is to cost about $12,000. This speaks well for two of our College boys who are making a very successful start as architects.—*Mercury.*

The Animal Husbandry Department finished shearing their sheep last week. The average clip of the different breeds was as follows: Southdown, 6.66 pounds; Shropshire, 9.35 pounds; Dorsets, 6.44 pounds; Rambouillet, 14.7 pounds; Cotswold, 17.86 pounds.—*Herald.*

Dan Walters, a senior in the architecture course, who left for Independence, Kan., to work as draftsman for an architect till the beginning of next fall term, writes that work is plenty in that part of the State and that his principal is refusing orders for new buildings every week. He says that he likes the job and feels that he is in his proper element.

There will be a meeting in Commercial Club Hall, Monday evening, May 6, to discuss the new Kansas Food and Drugs Law. Addresses will be given by Dr. L. E. Sayre, of the University of Kansas, Dr. S. J. Crumbine, secretary of the State Board of Health, and Professor Willard. The public in general is invited, but grocers, butchers and druggists will find it of special value to them in getting an understanding of the requirements of the law.

The annual Ionian play was given in the College Auditorium last Tuesday night to a crowded house. The selection, "The Real Agatha," was a very appropriate and interesting one and the cast of characters good. There was but one verdict among the twenty-four hundred hearers—they all said that it was the most successful play ever given by the Ionian literary. The vocal selections rendered by members of the society were very fine, and the orchestra under the direction of R. H. Brown was first class. We regret that the INDUSTRIALIST is not expansive enough to permit an extended report of the program.

The court-house clock is finally in place and doing satisfactory work. It will probably require some time to get it completely regulated. The dials are six and a half feet in diameter and the figures fourteen inches in length. The pendulum, with a 75-pound ball, is nine feet in length, and makes a vibration in one and a half seconds. The hammer weighs forty pounds and strikes the hour on a bell weighing 1200 pounds. The clock weighs 1300 pounds and the winding, once per week, will require about twenty minutes. Behind each dial, for night use, are six 4-candle-power electric lights, regulated by an automatic switch.—*Mercury.*

The number of families who live in Manhattan to educate their children is constantly increasing and many of them, after surveying the advantages of a location near the Agricultural College, acquire permanent homes. This week Mrs. Wm. Raemer, of Herkimer, who came here to visit her daughter, a student in the College, and Mrs. J. D. Walters, a former neighbor of the Raemers, made efforts to find and purchase a suburban home. Mr. Raemer is a former member of the legislature from Marshall county and the owner of a fine farm and grain elevator at Herkimer, Kan. Over thirty families have permanently located in the vicinity of the College the past year.

Doctor Blachly, of Manhattan, has returned from Florida, where he spent the winter on account of his health. He did not forget the College while rusticating in the wild woods of the South. On his return he presented the zoölogical museum with about thirty skins of interesting water birds. Assistant Scheffer is mounting some of them for exhibition.

Director C. W. Burkett, of the Experiment Station of this College, will leave for Europe about May 25 to visit the wheat regions of Turkey and Southern Russia for the purpose of obtaining wheat varieties that might be of special value to Kansas. He expects to go over England and Central Europe to the lower Danube country, Turkey, and Russia, and return through Germany and the Netherlands. The trip will consume about three months. Mrs. Burkett will accompany the professor to Central Europe and remain there while he investigates the wheat countries, when they will return together to Manhattan. Director Burkett undertakes this extended trip in accordance with an act passed by the last legislature, published in No. 25 of the INDUSTRIALIST.

Captain George H. Shelton, general staff, Washington, D. C., made the annual inspection of the College cadets last Saturday afternoon. He arrived here in the forenoon with a belated Rock Island train from Oklahoma and left again on the east-bound Union Pacific plug, giving Captain Shaffer but little time to assemble and exhibit the battalion, but he was well satisfied with the appearance of the students and their company drills; in fact, he said that it was the best-drilled battalion he had inspected thus far on his trip. The only criticism he offered to Professor Walters, who, in the absence of President Nichols represented the executive office, was that the members of the Band wore two kinds of uniforms. He said that he hoped to see some of our boys at West Point.

The State oratorical contest of county high schools was held in the College Auditorium on Friday evening, May 3. Six schools were represented. Following are the schools and their respective orators: Norton, Lee Hanthorn; Chase, Louis La Coss; Sumner, John M. Pile; Decatur, Caleb Smick; Dickinson, Edw. H. Kohman; Cherokee, Mina Manchester. The judges on delivery were: J. E. Kammeyer, of this College; E. B. Matthews, of Hays Normal; and O. B. Towne, of Washburn College. The judges on manuscript were: H. Foster Jones, of the College of Emporia; E. M. Hopkins, of the State University; and Miss Maude Hamilton, of the State Normal. All the orations were of exceptionally high grade, and their delivery was fair. The judges ranked the representative of Sumner county first, the representative of Dickinson, county second, and the representative of Chase county third. The other three stood practically equal. The program was interspersed with vocal and instrumental music furnished by the College Orchestra, Prof. Olof Valley, and Miss Florence Sweet. The best of order prevailed throughout the evening, but owing to cold weather and bad roads the audience was rather small.

Arthur Capper, proprietor of the Topeka *Capital* and Weekly *Farmers Mail* and *Breeze*, in order to encourage girls and boys in farm work, has started a corn-raising contest. He offers $100 to the boy or girl who produces the best ear of corn this year. Another prize of a gold watch is offered for the second best. The contest is open to any boy or girl not over twenty-one years old who lives on a farm. All contestants must plant their own corn and cultivate it throughout the season. It costs nothing to try for the prizes. Mr. Capper will be glad to give full particulars to any one writing to him at Topeka, Kan.

We clip the following from Regent Blackburn's Anthony *Republican*. Mr. Blackburn is one of the most prominent and enthusiastic grape experimentalists in the Middle West. His efforts well illustrate what valuable work an individual citizen can do for the science and practice of horticulture: "The experimental grape yard of the editor has had a number of valuable additions in the way of species and varities through the kindness of the experimental section of pomological investigations, Department of Agriculture, and now has under observation and test for this climate and soil about one hundred twenty varieties of grapes. Thirty-five or more will fruit this year. Fifteen sorts of fine table and wine grapes of Europe and California are under test, which comprehends more Vinifera varieties than are to be found elsewhere in the State; it is doubtful if they prove of value other than for cross breeding with American hardy vines. From them all it is hoped a dozen good varieties, giving the colors red, white and black in succession from August 1 to October 1, hardy and sure croppers may be secured, and some new sorts originated."

There will be a civil-service examination on May 15 for an assistant physiologist, Department of Agriculture, salary $1600. Experience in corn breeding and a thesis on corn improvement will count the heaviest. Also for a pathologist, Department of Agriculture, salary $1200. The person will be put in charge of the field work in the spring-wheat belt of the northern states. Also for a farrier, quartermaster's department at large, Ft. Riley, at $1440. The position will require a graduate from a veterinary college. Also for an aid, coast and geodetic survey, $720 to $900, the age limit to be from 18 to 25 years. On May 22 the following examinations are to be held: Scientific assistant in veterinary zoölogy, male, at $1000 per annum; statistician, geological survey, at $1200; artist in the bureau of chemistry, Department of Agriculture, at $10 a day when actually employed, about 50 days employment during the year. Experience in illustrating scientific subjects counts heavily. On May 29 the following examinations will be held: Laboratory assistant, qualified as glass blower, in bureau of chemistry, at $1000; laboratory assistant, bureau of animal industry, at $600 to $1000 per annum; electrician, quartermaster's department, at $1000; inspector of construction, quartermaster's department at large, at $900; fireman, stationary, at $780 per annum, quartermaster's department at large, Fort Rosecrans, Cal.; medical interne, government hospital for the insane,

at $600 per annum and maintenance. Interested parties should write to Civil Service Commission, Washington, D. C., for information and application blanks.

Alumni and Former Students.

Born to E. M. Amos, '02, and Anna (O'Daniel) Amos, '03, a son, April 21.

M. L. Morgan, student in 1893, now holds a responsible position with the United Zinc and Chemical Company, Argentine, Kan.

Henrietta (Evans) Wakefield, of Chicago, former student and wife of O. R. Wakefield, '04, is reported to be very ill with cancer, for which she recently underwent an operation.

K. P. Mason, '04, recently received the degree of Doctor of Medicine in the Kansas Medical College, Topeka, and has taken up the practice of medicine in his home town, Cawker City, Kan.

Bertha (Bachellor) Foster, '88, has not been able to cut herself off entirely from public work in domestic science, and is giving daily lectures and demonstrations in the food department of Emery, Bird, Thayer. This, with the care of her husband and his five children, suffices to keep her well occupied.

Henrietta Hofer, '02, is visiting friends in town, having come especially to attend the Cunningham-Ross wedding. She has favored the public upon several occasions with her beautiful singing. At the close of her year's work as instructor in vocal music in Graceland College, Lamoni, Iowa, she will visit her mother at Brielle, N. J., and her sister Christine (Hofer) Johnson, '02, at Belleville, N. J.

At the recent meeting of the Astronomical and Physical Society of America, E. F. Nichols, '88, presented a paper on "The Absence of Long Heat Rays in the Sun's Spectrum." Philip Fox, '97, gave one on "The Period of Solar Rotation." "This is an investigation of the solar-rotation period based upon measurements of positions of 1600 calcium flocculi of one hundred of the Rumford spectroheliograms taken at Yerkes Observatory in the year 1904."

Gertrude E. Hole, '06, surprised her friends and neighbors by suddenly becoming Mrs. D. M. Campbell, Wednesday morning, May 1. Mr. Campbell is a former student, and a graduate of the Kansas City Veterinary College. He is now practicing his profession at Shawnee, Okla., where he and his bride will soon be at home. They will visit a few days with Mr. Campbell's parents at Meriden, Kan. Many friends will wish them much joy and prosperity.

Changes of address: J. A. Rokes, '93, Seattle, Wash.; J. G. Chitty, '05, Blaine, Kan.; R. D. Harrison, '06, Jewell, Kan.; H. V. Forest, '00, Thayer Kan.; R. S. Thompson, '05, 219 Garfield Avenue, Kansas City, Mo.; Richard Reece, '06, and J. L. Dow, '06, 6042 Woodlawn Avenue, Jackson Park, Chicago, Ill.; Otto A. Hanson, '05, Quincy, Ill., care of Gem City Business College.; F. L. Bates, '04, 217 Glen Avenue, Ann Arbor, Mich.; A. S. Stauffer, '04, 326 First street, Rockford, Ill.

W. O. Gray, '04, has just graduated in medicine from the University Medical College, Kansas City. He has been appointed emergency surgeon for the police department and hopes this may be the stepping-stone to a successful and useful physician's life.

J. B. Brown, '87, superintendent Indian Training School, Morris, Minn., visited the College last Saturday and was much interested in finding the few people that he knows and observing the many changes on the campus. His son is getting old enough to make him interested in taking note of the advantages from every point of view of different institutions.

Agnes (Fairchild) Kirshner, student in 1881, and her husband gave a reception Saturday evening, April 27, to the graduates and former students of the College residing in Kansas City and vicinity. About fifty assembled at the beautiful new home, 3320 Baltimore Avenue, and spent a most delightful evening. The occasion was quite informal. Music was rendered by several of those present, and all joined in "Alma Mater." President and Mrs. Nichols and Professor and Mrs. Willard were guests invited by Mrs. Kirshner, and after a delightful visit returned home Sunday.

J. M. Westgate, '97, is the author of Part IV, Bulletin No. 102, of the Bureau of Plant Industry. This treats of "The Application of Vegetable Propagation to Leguminous Forage Plants." The department discovered about four years ago that alfalfa could be propagated by cuttings, and the present bulletin describes in detail Mr. Westgate's experiments in propagating various species of legumes by this method. Plants of great individual merit can be multiplied in that way without any cross fertilization or production of seed. A number of interesting questions growing out of this are still to be investigated.

On Wednesday evening, May 1, Miss Alice Ross, '03, and Mr. J. C. Cunningham, '05, were married at the home of the bride's parents west of town. Preceding the ceremony Miss Hofer, '02, sang "O Promise Me" and "Spring Has Come," then R. H. Brown, '98, accompanied by Mrs. Brown at the piano, rendered a violin solo while Reverend Fisher, of the First Presbyterian church, performed the ceremony in the presence of a large number of friends and relatives. After Mr. and Mrs. Cunningham had received the hearty and happy congratulations of those present, refreshments were served in the dining-room by Mesdames Elsie (Robinson) Mudge and Peache (Washington) Anderson, while Miss Hougham, '03, presided at the punch bowl in the porch room. The many valuable presents received betoken the high esteem in which this young couple are held. They left Wednesday night for Centralia, where Mr. Cunningham is manager of the 300-acre Oberdorff fruit farms. The best wishes of a host of friends follow them. Among the guests from out of town were: Mamie Cunningham, '05, Fairview, Okla.; Alice (Perry) Hill, '03, Fayette, Mo.; Josephine (Wilder) McCullough, '98, Delavan, Kan.; Henrietta Hofer, '02, Lamoni, Ia., and G. W. Gasser, '05, Crete, Neb.

W. E. Mathewson, '01, has been elected to his old position as assistant professor of chemistry in this College. Since his resignation he has been studying in Germany, and the Chemical Department is very fortunate in getting him back. The additional work in that department on account of the new laws relating to food and drugs, concentrated feeding stuffs and commercial fertilizers requires considerable additions to the operating force. Mr. Mathewson's thoroughness and skill will find ample scope in that connection and in the research work of the Experiment Station, as well as in teaching. He has just returned from Europe and will begin work here in about a month.

We learn from the *Jayhawker* that:

Geo. C. Peck, '84, is manager of a book, news and stationery business in Jewell, Kan.

Clara M. Keyes, '87, who has become Mrs. Graham since last communication with the College, is living in Manila, P. I.

W. A. Corey, '84, of Los Angeles, Cal., is the organizer of the socialist party there and associate editor of *Common Sense.*

H. C. Turner, '01, who has been taking graduate work at the College for the past year, left March 30 for Capitan, N. M., to take up the work of forest planting assistant.

Frank Yeoman, '98, reports that he was married last Thanksgiving day to Miss Virginia Scott, of Osage City, Kan. They are at home at 4022 Terrace Avenue, Kansas City, Mo., where Mr. Yeoman is practicing law.

Mr. and Mrs. C. F. Doane, '96, have sold their house in Hyattsville, Md., to J. B. S. Norton, '96, and will leave about May 1 for Albert Lea, Wis., where Mr. Doane's work in connection with the U. S. dairy division will be located.

Mrs. Effie (Gilstrap) Frazier, '92, has taken up her abode in Tacoma, Wash., and expects to be with the Northwest Alumni Association at the next meeting. Mrs. Frazier and her mother are keeping house at 915½ Yakima street, Tacoma.

C. W. Fryhofer, '05, has been in New York for two months, where he made analyses of five hundred samples of market butter. During April he will be in the department laboratories at Washington. About May 1 he will leave for Chicago, where he will be located for several weeks.

Frank S. Shelton, '99, who has been employed the past year as bookkeeper for J. R. Heckman & Co., of Ketchikan, Alaska, is now in charge of the books and of a small company store for the Niblack Copper Company at a little place called Niblack, on Prince of Wales Island, some thirty miles from Ketchikan. Mr. Shelton says that fishing and hunting are both good over there, and should any wandering K. S. A. C.-ites chance to stray Alaskaward he will be glad of an opportunity to show them a good time.

Veterinary and Animal Husbandry Number

THE
INDUSTRIALIST

Vol. 33 No. 28

Issued Weekly By
Kansas State Agricultural College
Manhattan, Kansas

The Veterinary School

L. W. Goss
Burton R. Rogers
C. L. Barnes

The Animal Husbandry Department

R. J. Kinzer

Published by
PRINTING DEPARTMENT
J. D. Rickman, Supt.

Entered at post-office, Manhattan, Kan., as second-class matter. Act of July 16, 1894.

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Animal Husbandry Department

R. J. Kinzer, Professor of Animal Husbandry
Geo. C. Wheeler, Instructor in Animal Husbandry
C. A. Willson, Assistant in Animal Husbandry

THE INDUSTRIALIST.

VOL. 33. MANHATTAN, KAN., MAY 11, 1907. No. 28

Veterinary Science at the Kansas State Agricultural College.

Does Kansas Need a Veterinary School?

One of the positive evidences of advancing civilization and increasing population is an equal and proportionate advance in the division of labor. The homesteader cares for his sick animals as well as he knows how and to the best of his judgment. His neighbors are too far away and usually no more competent than he. While it was routine for them to care for healthful animals, so likewise was it rare for them to care for sick animals. Animal husbandry and agriculture was their business and study. Such losses as a veterinarian might have prevented (yet at a time too early for a livelihood for a veterinarian) have often sufficiently weighed the balance in the financial and discouragement scale as to cause homesteads to be abandoned.

In the same proportion as the census of human inhabitants increases in a certain area, so does the census of the domestic animals and local improvements increase. Likewise in the same proportion as contagious diseases increase in an increasing population, so does the concomitant congregation of domestic animals increase their diseases. For the human first comes the midwife and then the physician. For the domestic animals there comes the man who has read considerable and quite successfully nursed his own animals as well as a few for his neighbors. His calls become more frequent and he now charges for his services, for it takes him from his other intended means of livelihood. He could succeed better to be selfish and devote his whole time to the latter, but he sees and knows his neighbors need him in the former. He, by the little more that he does know, realizes more than the others how much more he ought to know, and how much that community is in need of a competent, thoroughly trained veterinarian.

All over the State of Kansas to-day there are just such men (they are not quacks or pretenders, for they are doing the best they can) who would gladly relinquish their empirical practice to a qualified veterinarian.

Farmers insure their inflammable property, and property

owners in cities go farther in paying, through taxation, a further insurance consisting of support to a city fire department and equipment. Many object to the tax until a fire breaks out, and they are then educated concerning its needs, in observing the efforts and accomplishments of the trained firefighters to prevent a devastating fire.

That Kansas has reached a stage when the veterinarian is an absolute necessity is proved by reference to Secretary Coburn's statistics. In 1860 Kansas had 107,206 people, and 69 of her 105 counties had no inhabitants. To-day 21 of these counties each has from 10,000 to 53,000 people with, of course, a corresponding increase in the live-stock census. To-day Kansas has 1,545,000 people,

977,958 horses and mules valued at.....	$91,471,843
3,088,482 cattle valued at.....	66,747,704
176,177 sheep valued at.....	704,708
2,177,125 hogs valued at.....	18,505,562

During the fiscal years 1905-'06, there died 44,085 horses and mules, 128,934 cattle, 4841 sheep, and 202,053 hogs, all except a few of the horses dying from disease. Those who believe in the principles of insurance must certainly realize the need of educating and distributing qualified veterinarians throughout the State to protect the immense wealth wrapped up in the live stock of Kansas. And just as wildcat insurance has falsely disillusioned many people against honest insurance, so in many communities has the typical "quack" and pretender given a false impression of the veterinary profession. It is our intent and purpose to offer so thorough a course in veterinary-medicine, and gradually improve it through our new building and additional facilities, equipment, and teaching force, that all who complete it will be so competent and well trained that they will be eagerly sought by the various communities in the State, and thereby cause this institution to be the ultimate factor in preventing this too high mortality in her domestic animals.

BURTON R. ROGERS.

Why the Veterinary School Should be Located at K. S. A. C.

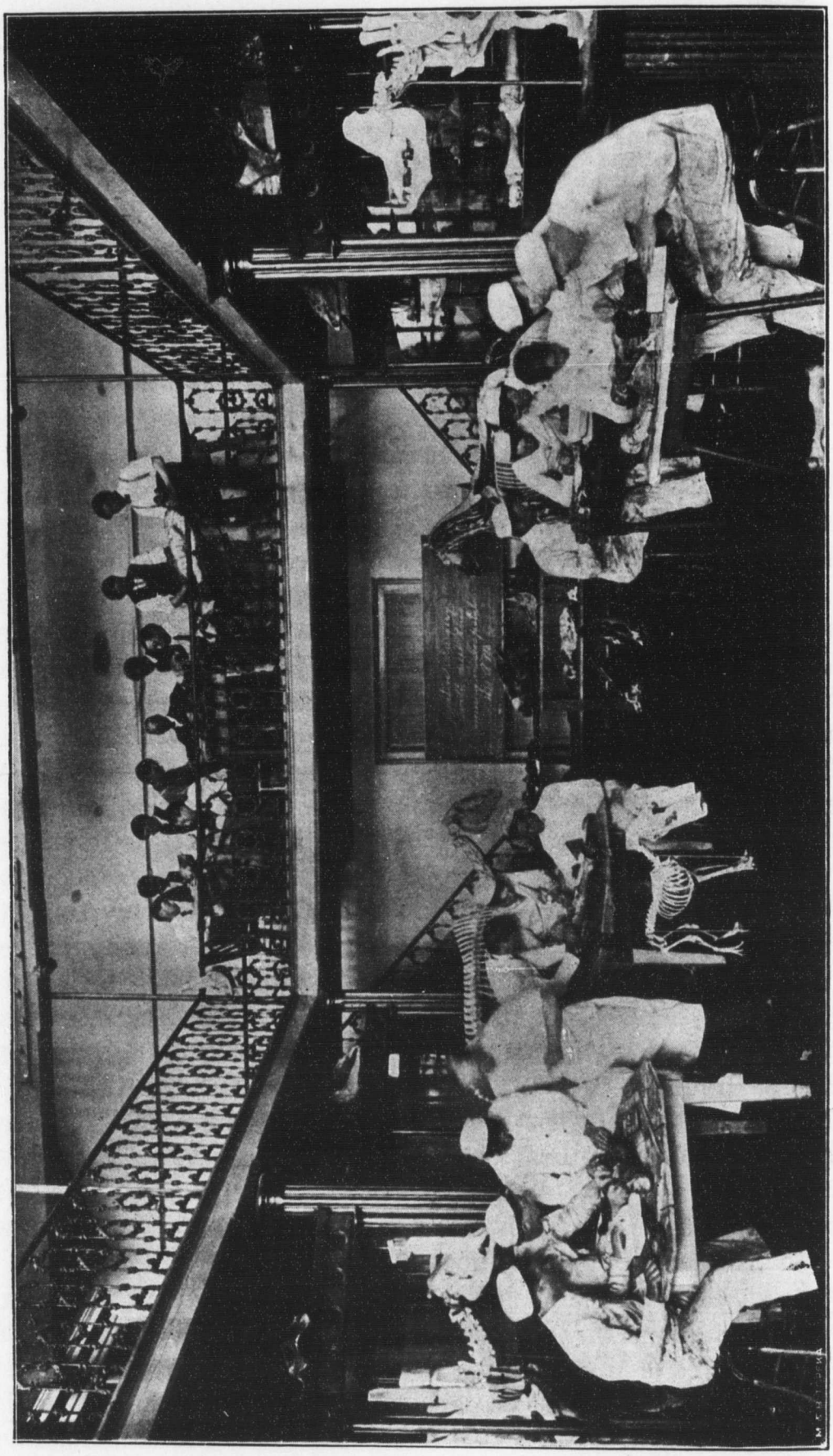
The veterinary school, as well as any other State institution, should be located in the central part of the State. This enables the students from all parts of the State to reach the school at small expense and with the least time spent in travel. At the Kansas State Agricultural College there is a large number of instructors and a most excellent equipment, a part of which is used in the instruction of the veterinary students. If the veterinary school were located elsewhere it would require extra ex-

pense to provide these. Having the best-equipped chemical laboratories in the State and a good force of instructors in chemistry they are prepared to give the veterinary student a good knowledge of chemistry, which is one of the essentials in their course. The Animal Husbandry Department, with its large number of pure-bred horses, cattle, sheep, and hogs, is prepared to give the veterinary student a good training in stock judging, breeds, and breeding. At the present time there is a great demand for men who have a knowledge of this line of work. The boards of health of cities are employing the veterinary surgeons as dairy and milk inspectors, who are expected to see that the dairies are kept in proper condition and that milk is not diluted or adulterated. He must be able to test for butter-fat, solids, adulterations, and preservatives. The veterinary student receives instruction in this work in the Dairy Department, and upon graduating is well prepared for such positions.

The veterinary school being located here, the agricultural and animal husbandry students have the advantage of a course in anatomy, physiology and bacteriology with well-equipped laboratories. These are essential to the man who is breeding and judging pure-bred live stock. The student may also find time to take up some work in the veterinary course in connection with his other College studies and receive training that he would otherwise have been unable to obtain, thus enabling him to recognize the first symtoms of disease in animals, thereby making him better fitted for his chosen vocation. All domestic and general science students take physiology and bacteriology in the Veterinary Department, and may, if they desire, elect other work, as anatomy, histology, materia medica, pathology, and pathagenic bacteriology. There are at the present time about two hundred fifty students, besides the regular veterinary students who are taking work in this department.

The clinic is one of the essentials of the medical college. The Kansas State Agricultural College has a large number of horses, cattle, sheep, and hogs, and as the College is carrying on breeding experiments a large amount of clinical work is supplied that the veterinary school in the city does not receive.

Being located at the Kansas State Agricultural College and Experiment Station, the instructors in the veterinary school can follow any line of investigation in which they are interested and obtain the support of the Experiment Station. As the College is the only place in the State that offers instruction in dairying and animal husbandry, and as instruction in chemistry, mathematics,



Class in Veterinary Anatomy.

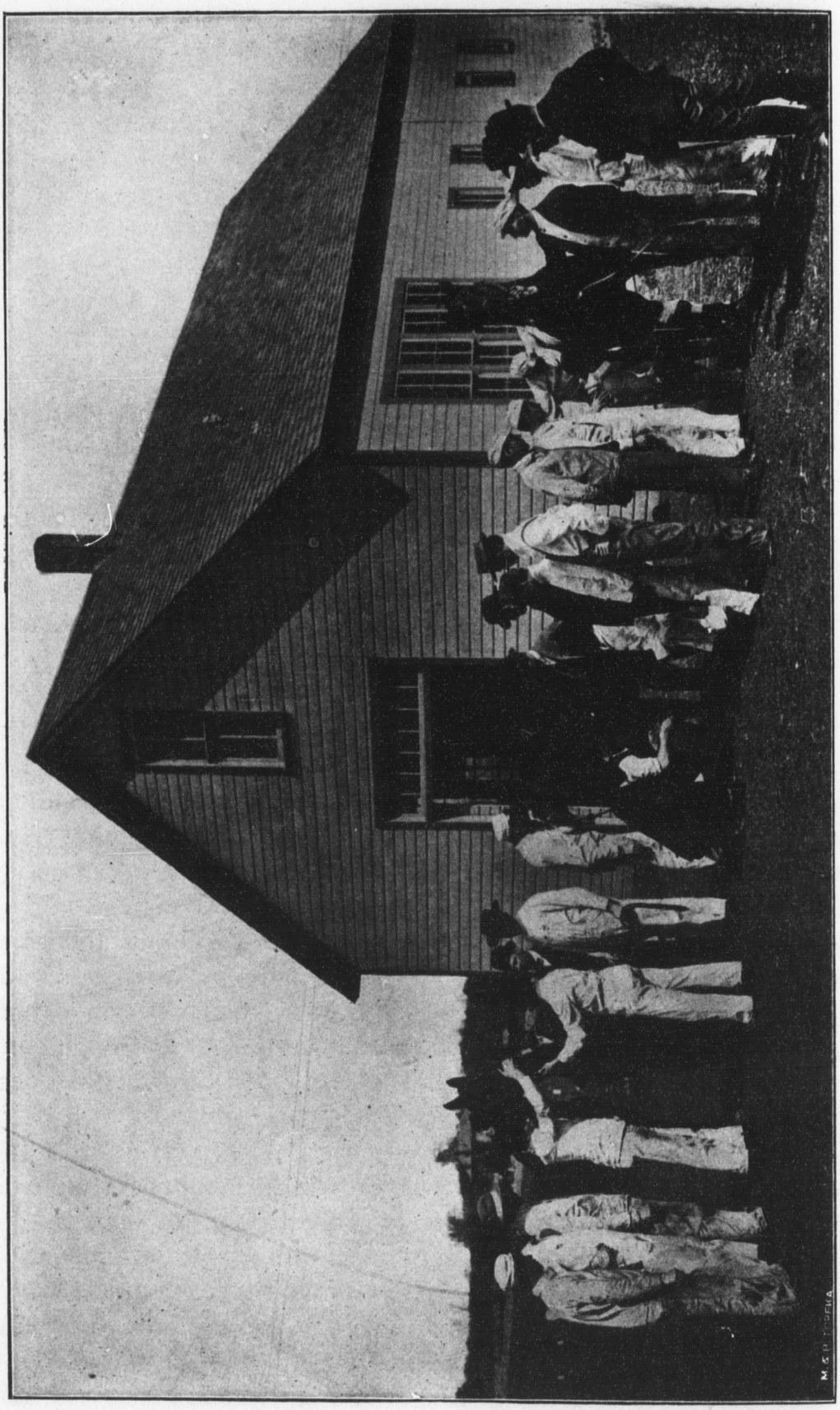
physics, history, horticulture, botany, zoölogy, English and German is given here also, it makes it possible, by the addition of a $70,000 veterinary building which is to be built this coming year, to equip a school here that would cost $200,000.00 if located elsewhere. Thus it is important that the veterinary school be located at the Agricultural College, as the courses in agriculture and veterinary science are closely related. The two schools can be operated together by an additional expense of one-third of what it would cost to maintain a veterinary school if it were located by itself.

L. W. Goss.

The Veterinary Clinic.

In order that the student may derive the greatest benefit from a course in veterinary science, the practical demonstration of theoretical principles is necessary. The daily clinic at the Veterinary Department of the Kansas State Agricultural College for the past two years has furnished this practical work for the students of veterinary science. Over 800 animals have been treated by the department during the past two years for the purpose of illustrating the different actions of drugs and the benefit derived from operations. These sick animals are brought to the clinic for treatment, and serve a double purpose. On the one hand the student receives individual instruction in practical work, while at the same time the owner is having his animal treated by skilled veterinarians. Many of these animals remain in the hospital from a few days to several months, giving the student an opportunity to become familiar with the changes during the course of the disease. The veterinary hospital work is conducted upon the same principles as that of the hospitals connected with our leading medical colleges. This building is furnished with an operating room, eight single stalls, three box stalls, and an instrument room. On the second floor of the hospital is the steward's room, grain bins, hay and straw lofts.

The clinic department is equipped with a large number of the modern surgical instruments necessary for demonstration and practical work. Patients to be operated upon are confined in stocks for the minor operations and cast and anesthetized for the major operations by the most approved methods to avoid injury. The clinic is the students' laboratory in surgery and medicine, and is conducted similar to laboratory work in other subjects. The upper classmen are assigned the cases as soon as they are admitted to the hospital or the case is diagnosed. The patient is treated by the student in charge of the case, under the direct



Students Diagnosing Sick Horses.

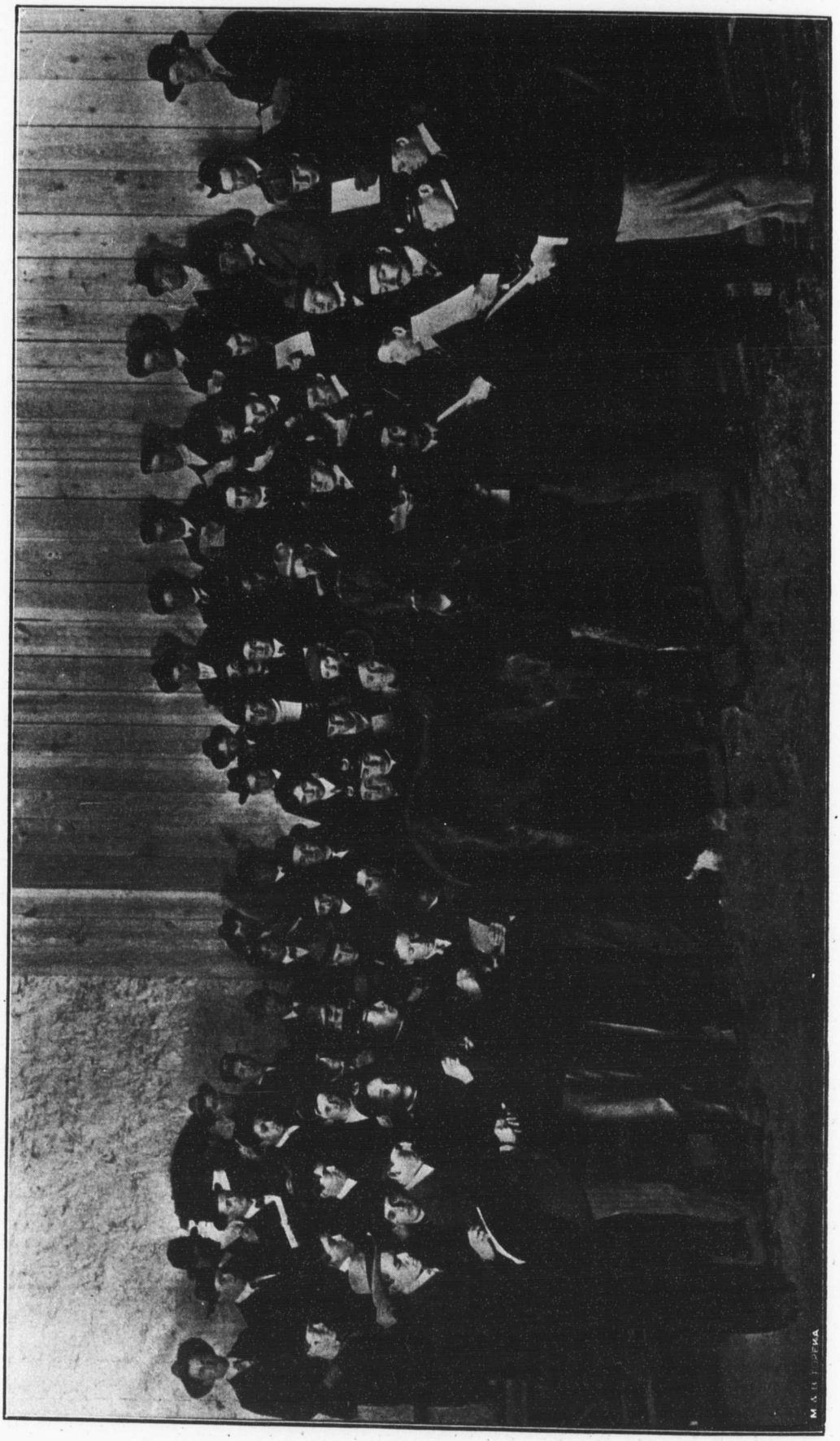
supervision of one or more of the veterinarians. A careful record of the case is kept by the student until the patient is discharged from the hospital. These records eventually become the property of the student, to be used in the future in similar cases in his practice. Patients that undergo major operations are retained in the hospital until they have recovered sufficiently to be out of danger. Animals requiring only minor operations do not remain in the hospital. A large number of the patients treated by the Veterinary Department are not able to be brought to the College. In these cases various members of the veterinary faculty and the upper classmen make professional trips to the country to treat these sick animals.

The stockmen within a radius of sixty miles of Manhattan have taken advantage of the opportunity of having their animals treated by the veterinarians at the Kansas State Agricultural College. At the same time the students of the veterinary science course are receiving practical instruction which cannot be obtained in any other way. The variety of diseases found in this immense area compares favorably with that found in the other veterinary colleges of this country.

The individual instruction given the student in the clinical department prepares him for his life work and has placed this Veterinary Department far in advance of those veterinary colleges that bar the student from assisting in operations and having personal oversight of the patient. C. L. BARNES.

Animal Husbandry Department, Kansas State Agricultural College.

Animal husbandry the world over is an essential feature of all successful agriculture. It is estimated that over 45 per cent of the food consumed by the better classes in the United States consists of animals or animal products. On this basis, fully one-half of the food expenditures of the average family are for animal products. The necessity for some form of live-stock husbandry in order to maintain the fertility of the land is generally admitted. The animal, however, cannot be regarded simply as a manure factory; the vast importance of the animal as an economical transformer of solar energy as stored in various forms of plant life into such products as may be used for human food may be considered as the primary object for growing animals. Animals as beasts of burden and for performing labor, while not so important as before the introduction of so many more modern forms of power and



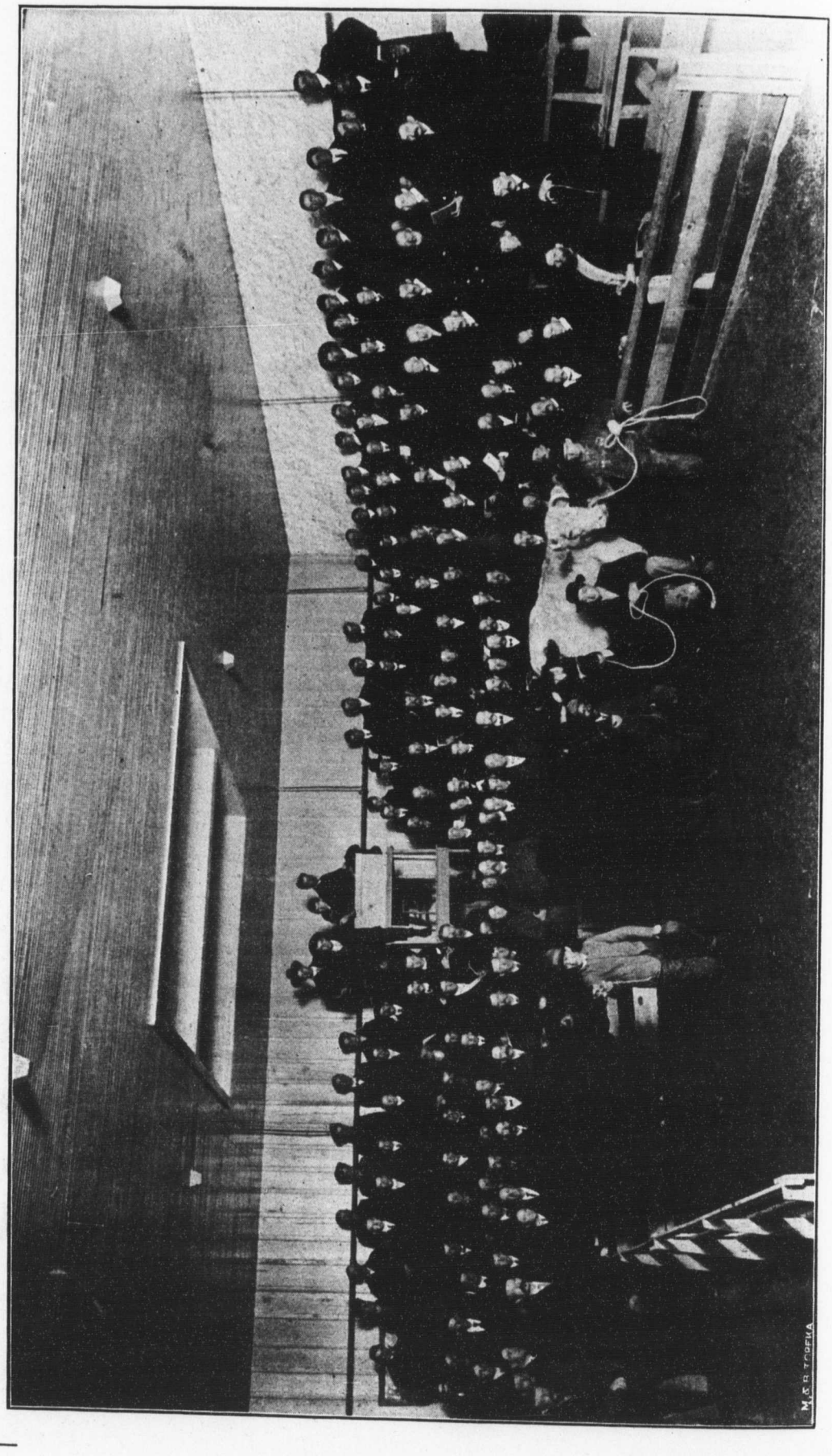
Students Judging Horses.

transportation, are still an important feature of the live-stock industry.

Realizing the importance of this great industry, not only to the State but to the Nation, the work of the Animal Husbandry Department of the College has been planned in such a way as to give instruction along all lines that in any way pertain to this industry. There is a constantly increasing demand for young men who have been trained along the lines of scientific and practical animal husbandry work. The demand for such men is unlimited, and the salaries paid for such services are not exceeded by those of any other calling.

The first essential in the training of a man who would succeed in live-stock work is that he be given a thorough understanding and knowledge of the most approved types and classes of our modern domestic animals; in other words, he must learn to be a keen and skilful judge of all the various kinds of live stock. Much of this training can be obtained only by getting into close touch with the live animals themselves. For this reason representatives of most of the leading breeds of horses, cattle, sheep and swine are kept in the College barns, to be used in class-room lectures and demonstrations. At present the horse department is represented by only the pure-bred Percherons; representatives of other breeds are soon to be added. The beef-cattle interests are represented by Shorthorns, Angus, and Herefords. Among the sheep are found representative specimens of the Shropshires, Southdowns, Dorsets, Cotswolds, and Rambouillets. The swine herd consists of Poland-Chinas, Berkshires, Duroc-Jerseys, Chester Whites, Hampshires, Yorkshires, and Tamworths. The representatives of each breed have been carefully selected, with especial attention being given to breed characteristics and individual merit.

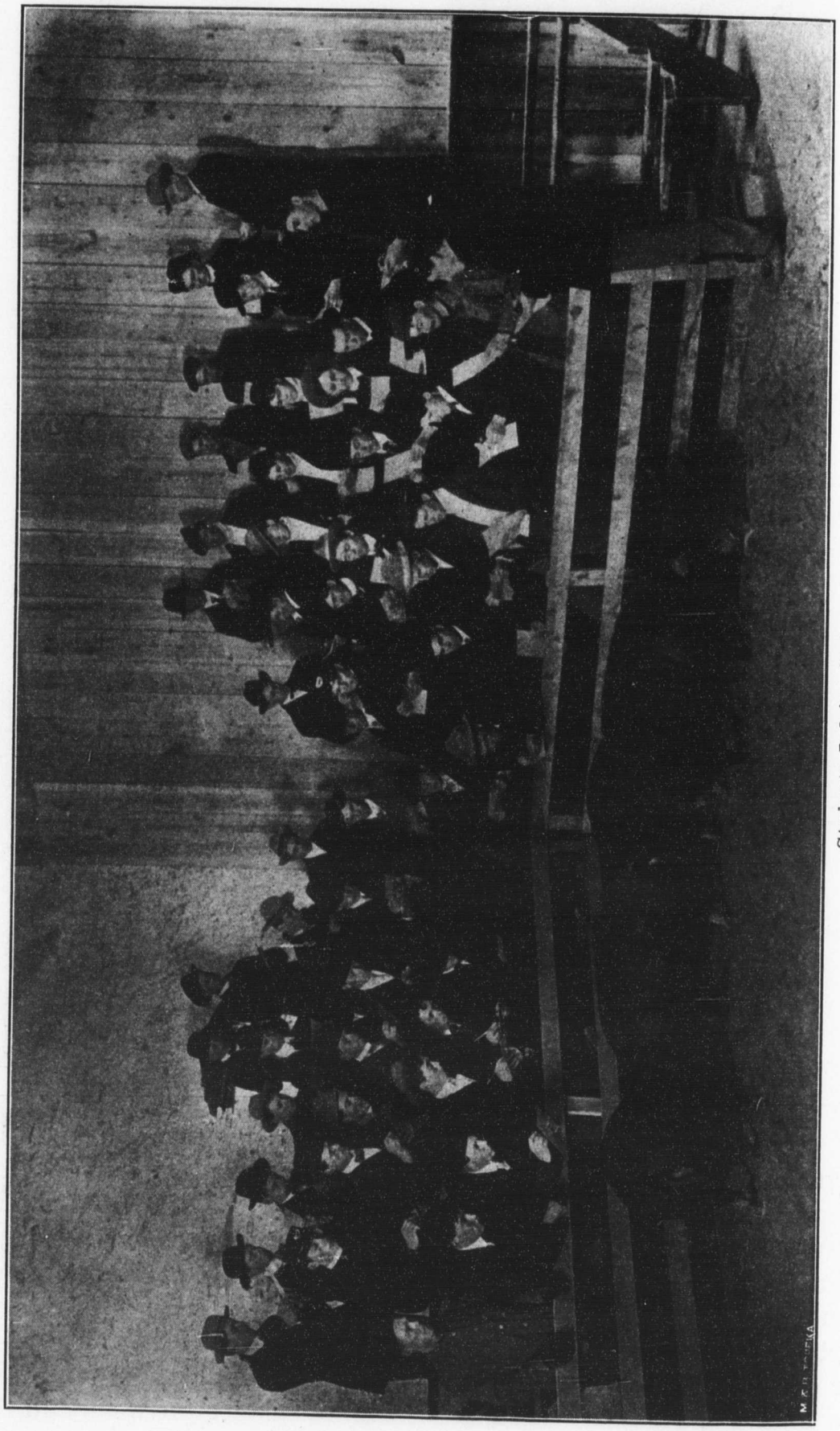
The first work that the student receives in this department is during the winter term of the second year, at which time he receives his first instructions in live-stock judging. During the morning hours lectures are given on the points to be observed in judging, and the breed characteristics, and during the afternoon hours the students assemble in a large well-lighted, steam-heated judging pavilion, where the live animals are brought to them for inspection and examination. Here the student is first taught to use the score-card, and later he is required to pass judgment on groups of all breeds and market classes of live stock. The score-card is only used until the student becomes familiar with the different parts of the animal, and gains a knowledge of the value assigned to each part. The score card for an Angus cow would read as follows:



Students Judging Cattle.

	Possible score.....	Student's score.....	Corrected score.....
1. *Color.*—Black. White is objectionable except on underline behind the navel, and there only to a moderate extent	2		
2. *Head.*—Forehead moderately broad, and slightly indented; tapering toward the nose; muzzle fine; nostrils wide and open; distance from eyes to nostrils of moderate length; eyes full, bright and expressive, indicative of good disposition; ears large, slightly rising upward, and well furnished with hair; poll well defined and without any appearance of horns or scurs; jaws clean	10		
3. *Throat.*—Clean, without any development of loose flesh underneath	3		
4. *Neck.*—Of medium length, spreading out to meet the shoulders, with full neck vein	3		
5. *Shoulders.*—Moderately oblique, well covered on blades and top; with vertebra or backbone slightly above the scapula or shoulder blades, which should be moderately broad	6		
6. *Chest.*—Wide and deep; round and full just back of elbows	10		
7. *Brisket.*—Deep and moderately projecting from between the legs, and proportionately covered with flesh and fat	4		
8. *Ribs.*—Well sprung from backbone, arched and deep, neatly joined to the crops and loins	8		
9. *Back.*—Broad and straight from crops to hooks; loins strong; hook bones moderate in width, not prominent, and well covered; rumps long, full, level, and rounded neatly into hindquarters	10		
10. *Hindquarters.*—Deep and full; thighs thick and muscular, and in proportion with hindquarters; twist filled out well in its "seam" so as to form an even wide plain between the thighs	8		
11. *Tail.* Fine, coming neatly out of the body on a line with the back, and hanging at right angles to it	3		
12. *Udder.*—Not fleshy, coming well forward in line with body and well up behind; teats squarely placed, well apart and of good size	8		
13. *Underline.*—Straight, as nearly as possible: flank deep and full	4		
14. *Legs.*—Short, straight and squarely placed; hind legs slightly inclined forward below the hocks; forearm muscular; bones fine and clean	3		
15. *Flesh.*—Even and without patchiness	3		
16. *Skin.*—Of moderate thickness, and mellow touch, abundantly covered with thick, soft hair. (Much of the thriftiness, feeding properties, and value of the animal depends upon this quality, which is of great weight in the grazier's and butcher's judgment). A good "touch" will compensate for some deficiencies of form. Nothing can compensate for a skin hard and stiff. In raising the skin from the body it should have a substantial, soft, flexible feeling, and when beneath the outspread hand it should move easily, as though resting on a soft, cellular substance, which, however, becomes firmer as the animal ripens. A thin, papery skin is objectionable, especially in a cold climate	10		
17. *General Appearance.*—Elegant, well bred, and feminine. The walk square, the step quick, and the head up	5		
Perfection	100		

This illustrates how each part of the animal is taken up and discussed separately. Cards similar to this are provided for each breed, and also for market classes. When the student is thoroughly familiar with the score-card for a breed or a market class, the group, or comparative judging, is introduced. Here five or more animals are brought into the pavilion, and he is required to place each animal in the order of its individual merit, and to give clearly the reasons substantiating his judgment. He is taught to compare one animal with another, and to balance the weak and the strong points of each in making his decisions. This work is sim-



Students Judging Swine.

ilar to that of judging at a county or a state fair. Each breed is taken up separately, its early history, development, improvers and merits are each given due attention, and its especial adaptations to Kansas conditions are fully discussed.

During the junior year the student receives instruction along the lines of animal nutrition and live-stock feeding. The chemical composition of all common feed stuffs and their effect upon the animal is studied, and the student is shown how to apply the standards and table of digestible nutrients in feed stuffs to actual feed-lot conditions. The most economical combinations of foods for all purposes, such as maintenance, the growing and fattening of pure-bred animals, and of all market classes, are given special attention. The results of various feeding experiments are also carefully studied.

During the senior year, instruction is given on the principles of animal breeding. This subject includes selection, heredity, atavism, prepotency, in-breeding, cross-breeding, line-breeding, etc., special attention being directed to the methods and practices of the most successful live-stock improvers. It is the aim in this work to give the student as clear a knowledge as possible of the fundamental rules and principles of animal breeding. During the senior year, group judging is again taken up. Visits are made to many of the most successful stock farms, which offer an excellent opportunity for this kind of work. The subject of animal products is also taken up during the senior year. Attention is given to all products that are made from farm animals. Slaughtering and methods of cutting and curing of meats and live-stock markets also receive due attention.

Live-stock management includes housing, general care, management, and marketing of all classes of live stock. During the senior year a study of the herd-books published by the various live-stock registry associations and the reading and writing of pedigrees is taken up, and the student is made familiar with all forms of pedigrees. It is the aim of this department to make this work thoroughly practical and useful to the student, and, to so train him that upon the completion of this course he will be competent to build up a herd of his own, or to take the management of a herd or flock for someone else.

If the student does not wish to return to the farm, there are many positions open to graduates of this department in college and experiment station work, agricultural newspaper work, positions with live-stock commission houses, packing houses, factories for animal by-products, food stuffs, and many other positions which are combined with very attractive salaries.

During the latter part of the winter term of each year live-stock judging contests are held, which awaken great enthusiasm and interest among the different classes. The live-stock breeders of the State and those interested in this line of work offer much encouragement in the way of prizes for these contests. Some breeders offer choice animals from their herds to be put in as prizes, others offer cash prizes, live-stock commission houses offer medals and cash prizes which are highly appreciated by the students. The Clay, Robinson Live-Stock Commission Company, of Chicago, is offering annually $1000 to be competed for by the various agricultural colleges, to be used for fellowships to worthy students, and J. Ogden Armour is this year offering $5000 to be competed for in this manner.

Feeding experiments of some kind are in progress at all times, and many of the best students find work in connection with these experiments which enable them to pay a large per cent of their College expenses. Opportunities are also open for the student to do original investigation work himself, with whatever class of animals he may choose.

The studies presented by this department to the student who takes up the ten-weeks' short course consist of the study of various breeds of live stock, their special adaptation to Kansas conditions, live-stock judging, and the feeding and care of all classes of farm animals. During the ten-days' institute, which was inaugurated last year, and will be repeated this year, lectures are given on live stock management, breeds and classes of live stock, live-stock judging, with the majority of the time devoted to practice work in judging. Stock of various kinds from many of the best breeding farms over the State will be shipped to the College for this work, and it is the aim to give those who cannot take up the regular four-year course, and those who do not have time to take up the ten-weeks' short course, the greatest amount of work possible in ten days' time. Students in this work are kept busy all day, and during the evening lectures are given on live-stock subjects that are of special interest to them. R. J. KINZER.

Wheat made Kansas famous, corn has made us rich. Alfalfa has proved our salvation. But the "man behind the gun" is poor old Dobbin—the horse which has made all these things possible, and is the power behind the throne. Why should we sneer at the calling of the veterinarian?

THE INDUSTRIALIST

Vol. 33 **No. 29**

Issued Weekly By

Kansas State Agricultural College

Manhattan, Kansas

Published by

PRINTING DEPARTMENT

J. D. Rickman, Supt.

Entered at post-office, Manhattan, Kan., as second-class matter. Act of July 16, 1894.

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Miss Kate Tinkey.....Assistant Librarian
Earl N. Rodell, B. S. (K. S. A. C).....Assistant in Printing
Miss Helen Thompson, B. S. (K. S. A. C.).....Assistant in Preparatory Department
Roy A. Seaton, B. S. (K. S. A. C.).....Assistant in Mechanical Engineering
M. Francis Ahearn, B. S. (Mass. Ag. College).....Foreman of Greenhouses
Miss Cecilia Augspurger (Illinois Wesleyan).....Assistant in Music
Miss Gertrude Stump, B. S. (K. S. A. C.).....Assistant in Domestic Art
M. Sheldon Brandt, Ph. B. (Yale).....Assistant in Architecture and Drawing
Heman A. Wood, B. S. (Olivet) .....Assistant in Chemistry
Chas. Yost.....Assistant in Heat and Power Department
Earle B. Milliard.....Foreman of Blacksmithing
J. T. Parker,.....Assistant in Woodwork
Wm. H. Andrews, A. B. (Chicago).....Assistant in Mathematics
Miss Leila K. McCotter, B. S. (Michigan).....Assistant in Mathematics
Miss Edetha M. Washburn, A. B (K. U.).....Assistant in English
J. D. Magee, A. M. (Chicago) .....Assistant in Mathematics
E. G. Meinzer, A. B. (Beloit) .....Assistant in German
Miss Florence S. Latimer, B M. (Ferry Hall Seminary).....Assistant in Music
Miss Marjorie Russell (Mechanics' Institute).....Assistant in Domestic Science
Herbert F. Bergman, B. S. (K. S. A. C.).....Assistant in Botany
C. A. Willson, B. S. (Mich. Agr. College).....Assistant in Animal Husbandry
Burton Rogers, D. V. M. (Iowa State College).....Assistant in Veterinary Science
Henry D. Scudder, B. S. (Illinois) .....Assistant in Agronomy
Miss Clara Willis (Framingham Normal).....Assistant in Domestic Science
C. O. Swanson, M. Agr. (Minn.).....Assistant Chemist, Experiment Station
Herbert H. King, M. A. (Ewing College).....Assistant in Chemistry
Edw. C. Crowley, Ph. B. (Yale).....Assistant in Chemistry
Hugh Oliver.....Assistant in Heat and Power Department
Miss Charlaine Furley, B. A. (Fairmount).....Assistant in Preparatory Department
Miss Jessie Reynolds, A. B. (K. U.).....Assistant in Preparatory Department
Miss Anne M. Boyd, A. B., Lib. Sci. (Jas. Millikin Univ.) .....Assistant Librarian
D. M. Wilson.....Assistant in Dairy Husbandry
Leland E. Call, B. S. (Ohio State University).....Assistant in Agronomy
Miss Mary F. Nesbit, A. B. (Illinois University).....Assistant in Mathematics
Miss Annette Leonard, A. B. (K. U.).....Assistant in English
William C. Lane, B. S. (K. S. A. C.) .....Assistant in Physics
William R Lewis.....Janitor

THE INDUSTRIALIST.

VOL. 33. MANHATTAN, KAN., MAY 18, 1907. No. 29

From the Committee on Memorial Portraits.

We wish to call your attention to the letter sent you by the Committee on Memorial Portraits, April 14, 1906, of which the following is an extract:

At the annual meeting of the Alumni Association in June, 1905, a committee consisting of the undersigned was appointed for the purpose of procuring oil portraits of the three deceased ex-presidents of the College, said portraits to be hung in a suitable place at the College. The Board of Regents have set aside wall space in the Library Building for the purpose of hanging the portraits, said wall space to be under the control of the Alumni Association, and the collection of portraits there hung is to be known as the "Alumni Memorial Section."

The movement to secure portraits of the three deceased ex-presidents of the College is only to form a nucleus of what, it is hoped, will some day become a large collection of portraits, embracing distinguished members of the Association and of the College Faculty. And it is further hoped that some day the Association will have a suitable Alumni Memorial building upon the College campus, in which may be preserved this collection of portraits, with other works of art and records relating to the work of the men and women who have gone out from our College, and of those who have helped to build up the institution we honor and love.

To accomplish the present purpose the Association has instructed the Committee to take all necessary steps. After due consideration and a careful search for information it is found necessary to provide a fund of at least $1000. It is the purpose of the Association to provide the three paintings of the three deceased ex-presidents of the College—Dr. Joseph Denison, Hon. Jno. A. Anderson, and Dr. Geo. T. Fairchild—and all three or none. It is thought that a subscription from the membership of the Association can provide this fund readily, and that all will welcome the opportunity to participate in the work. To this end you are requested to make your subscription at an early day on the blank form hereto attached, which you will please fill out for the amount you feel you can afford to assist the movement, and mail to the secretary, as the form directs. Due credit will be given by the secretary.

Up to this date the committee has received contributions from only eighty-six persons out of our nearly twelve hundred graduates, with a total amount of $345.04. As it is desired to raise at least $1000, it is earnestly hoped that those who have not subscribed will do so at once in order that the required amount may be raised by the annual meeting of the Association, June 19, 1907.

The matter of securing memorial portraits was first suggested by prominent graduates, and they have responded liberally. The project has now progressed so far that it must be carried on to completion. Some of those who have subscribed have signified their willingness to increase their subscription, but this would hardly be fair when so many of our graduates have not responded at all. We had hoped to have every graduate represented in this subscription. Any amount will be thankfully received. Small sums are as welcome as large.

Your personal check, a bank draft, a postal or express money order may be transmitted by you with your subscription. Will you not give this your immediate attention and subscribe at once?

Trusting that we may hear from you at an early date, we remain. Respectfully yours,

J. C. CHRISTENSEN, '94, *President.*
MARGARET J. MINIS, '01, *Secretary-Treasurer.*

SUBSCRIPTION BLANK.

.....190.....

MISS MARGARET J. MINIS, *Secretary,*
Manhattan, Kansas.

DEAR MADAM:

Enclosed please find .....for $..... as my subscription to the Memorial Portrait Fund now being raised by the Alumni Association of the Kansas State Agricultural College for the purpose of procuring oil portraits of the three deceased ex-presidents of the College—Joseph Denison, John A. Anderson, and Geo. T. Fairchild.

SECRETARY'S ENTRY.

RECEIPT NO.	DATE

Signed ..... *Class of* .....

Address .....

Receipt for this subscription will be sent to you by the secretary, and public acknowledgement of the same will be made by the treasurer of the committee by the publication in the INDUSTRIALIST of the number and amount of the secretary's receipt. No names of subscribers will be published, but you can see that your subscription has been properly accounted for by comparing your receipt number with the acknowledgement in the INDUSTRIALIST.

Some Notes.

Death is always expected. When it comes naturally and peacefully, one should not be disturbed; when it comes violently, men revolt and ask why.

The figures here submitted are compiled from one daily newspaper, and this paper not a yellow journal. The time covers the first fifty-nine days of the year 1907. The figures are from the newspaper—accidents confined to the United States; the comments are the writer's.

	January.	February.
Murders	45	29
Suicides	31	30
Railroad wrecks	89	74
Lynched	1	0
Explosions	186	18
Frozen	0	10
Drowned	0	172
Other accidents	35	78
Totals	387	411

No record of injuries in railroad and other accidents was kept, though the number is many times the killed. About twenty per cent of these violent deaths occur in railroad accidents, and one naturally inquires why. Is it faulty construction, bad management, incompetent or overworked employees, an inordinate desire to make money, an effort to satisfy the demands of an exacting public desirous of getting somewhere by annihilating time?

People seem to think no train ever runs too fast. In February, out of New York City an excursion train went on a curve sixty miles an hour. It went off the curve—22 killed, 145 injured. The officials since then are reported to have said the curve had been tested eighty miles an hour. Can eighty or sixty miles an hour on a curve be considered safe? This was but a repetition of the English horror of a few months before. Is it a reasonable excuse to say the "third rail," on that occasion, was torn loose? Does not the constant hammering, day after day, of a train weaken the strength and safety of a road? How much is the corporation to blame, how much the public that demands such a schedule of sixty miles an hour?

Wreck after wreck has occurred by bridges going down. The public is surely not to blame for defective bridges. Is the force on the roads too small to keep bridges in repair, is the material bad, the construction defective, the inspector or master-mechanic incompetent, or are the trains too heavy? The questions are merely asked; the writer does not pretend to know. But he does know when he reads of a woman with a child in her arms is pin-

ioned by a wreck and burned to death in the presence of passengers unable to render her assistance that his sympathies are stirred to their depths.

Explosions represent twenty-five per cent of these accidents. Whether avoidable or not is not known. Must men take so great a risk in order to make a living, is the corporation which uses so many explosives negligent, or is the individual workman careless? Railroad accidents and explosions account for forty-six per cent of this loss of life in January and February.

During the same time the murders are seventy-four and suicides sixty-one. How many of these were inspired directly or indirectly by that unhealthy condition of the public mind to get rich as is exhibited by corporations can not be known.

In keeping with these things is the report published early in February that the United States steel trust for the three months ending January 30, 1907, had made $41,000,000. But they forgot to publish that the record shows that in Alleghany county, Pennsylvania, the place where the steel and iron and other industries are situated, "over 17,000 deaths and injuries a year in all the industries is the record." The coroner of that county is reported to have said, "Less consideration is given to the life of a foreigner than to the life of a horse or mule." Healthy public mind is that!

In addition to the ten reported frozen the paper adds many more were frozen to death. Unhappy condition in a land of such plenty, where a little foresight, prudence and economy could avert so many and so dire calamities.

Only one lynched. That surely is an improvement over the past. But it is a dark day that brings no ray of light or streak of sunshine. Sometimes the eternal fitness of things tries to adjust or readjust matters and the irresistibly funny thing happens. Thus, in Oklahoma, during one of these months, a man tried to kill an undertaker because a certain funeral bill was too high. This was doubtless in accord with the eternal decrees, but each was a bad marksman, and so for the present two extra funerals have been indefinitely postponed.

Formerly, some geographers divided nations into enlightened, civilized, half civilized, barbarous, and savage. Just where the United States would appear one might not like to say. If enlightened or civilized, why so many violent deaths? Is violence an accompaniment of enlightenment or civilization? Are the demands for either of these conditions such that life must be sacrificed to acquire them? Then whose life and why? We would doubtless resent the term barbarous or savage.

Perhaps the things that come to pass during these two months are in accord with the Malthusian doctrine, that unless checked population will increase too fast for the means of subsistence. In furtherance of this doctrine these deaths might be made an excuse or an incentive to early marriage, because by railroads and other methods population can be reduced so as to keep the number of people to be fed within proper limits. B. S. McFARLAND.

The above cut represents the medal offered by the Clay, Robinson Live Stock Commission Company, of Kansas City, Mo., as a prize for the students' stock-judging contest. The medal was won by B. C. Copeland, of the senior class.

Arrangements have been completed by Institute Superintendent Miller, of this College, to run an "Alfalfa train" over the Santa Fe railroad system in eastern Kansas. The train will start at Topeka on June 10 and proceed to Atchison, Leavenworth, Holladay, Olathe, and Ottawa, thence run as far south as Independence, thence go west to Moline, north to Osage City, east to Ottawa and Lawrence, thence return to Topeka. Institute stops will be made at all stations. The trip will require six days and will be conducted by J. H. Miller, Professors TenEyck and Roberts, and Assistant Wheeler. The principal topic for discussion will be alfalfa.

Program for Spring Term, 1907, Showing Instructors, Subjects, and Number in Class.

Instructor.	First Hour.	Second Hour.	Third Hour.	Fourth Hour.	Fifth Hour.	Sixth Hour.	Seventh Hour.	Eighth Hour.
Walters	Roofs & Trusses 8	Arch. Comp. 2	Arch. Draw. 5	Home Arch. 8	Modeling T+T 10			
					Arch. Composition W+F 6			
Weeks			Ob. Drw. T+T. 14		Object Drawing Th. 38, F 41			
					Freehand Drawing Tu. 48, W 36			
Brandt		El. Proj. T+T. 15			El. Projection Th. 43, F 38			
		El. Proj. W+F. 18			Adv. Projection S 25			
Willard[1]	Ag. Chem. [2] 21	Elect. Chem. 4						
Wood	Chemistry II 39	Chem. III 25-16	Chem. V 37-25		Elective Laboratory W+F 4			
King				Chem. III 33				
				Chem. IV 30				
Crowley	Chem. III. Lab 37		Chem. III Lab 52		Chem. V Lab T+T 31, W+F 28			
				Chem. III 25				
Calvin					Chem. IV Lab T+T 36			
					Chem. II Lab W 24			
Popenoe[1]								
Dean[1]	Adv. Ent. 2	Adv. Ent. 6		Entomology 32	Entomology Lab T 16, T 16			
Scheffer		Zoölogy 24			Zoölogy Lab W+F 24			
Remick	Anal. Geom. 43	Anal. Geom. 38	Algebra III 23	Diff. Equat. 30				
Andrews	Algebra III 25	Geom. II. 40	Geometry II 39	Algebra IV 30				
Zeininger	Algebra IV 33	Geom. I. 28	Algebra I. 23	Algebra IV 26				
McCotter	Geometry I 12	Algebra III 19	Trigonometry 14	Geometry I 13				
Magee	Algebra II 30	Trigonometry 31	Algebra II 37	Geometry II 15				
Nesbit	Algebra I 20	Algebra IV 21	Geometry I 25	Algebra III 28				
Eyer	A. C. Mach 19	Power Sta. 19		Dynamo Des 19	A. C. Mach. Lab T+T 10, W+F 9			
Hamilton		El. Physics. 24	Physics IV. 18		Physics Lab			
Lane	El. Physics 34	Electricity. 25		El. Physics 28	Electricity Lab T+T 13, W+F 12			
Roberts[1]		Botany II 38	Botany II 33					
Freeman[1]	Botany I. 35		Botany II 46	Botany II 38				
Bergman	Botany II 29	Botany I. 42		Botany I. 37				
McKeever		Meth. & Mgt. 8	Psychology 25		Ethics 12			
McCormick	Shop L. III Tu. 7				Shop Lec. II. S 44			
					Engineering Laboratory III Tu. 14			
Potter	Mechanics 13	Thermody. II. 13	Hydraulics. 15		Mech. Draw. VII W+T 14			
Seaton	App. Mech. [2] 13			Valve Gears [2] 7	Mech. Draw. IV Th.+F 8		Shop L. VI. Th. 14	
House	Woodwork II. 28	Woodwork I. 22	Woodwork I. 19	Woodwork II. 31	Mech. Draw. I. T 12, W 15, T 10, F 15			
					Woodwork II. T+T 14, I W+F 47			
Wabnitz					Pattern Mkg. T 10, W 16, T 14, F 17			
Ridenour	Foundry M. 6				Mach. Shop. T 8, W 10, T 4, F 5, S 3			
Milliard	Blacksmithing I M. a. m., 20, M. p. m. 10				Foundry T 6, W 5, F 1, S 6		Shop Lect. I. W 34	
Dickens[1]		Orn. Gard. 5	Horticulture 38	Veg. Gard. 15	Blacksmithing I. T+T 19, W+F 20		Blacksmithing I. T+T 19, II S 17	
Eastman[1]					Hort. Industrial 29			
Brink	Eng. Lit. 16	Rhetoric II 26		Eng. Lit. II 16	American Literature 7:30 A. M 6			
Ward	Adv. Comp 14	Rhetoric I. 24	Rhet. II 24	Adv. Comp 18				
Rice	Rhet. I 15	Adv. Comp 26	Adv. Comp. 20	Rhet. I 18				

Washburn	Readings 21	Composition 19	Composition 24	Readings 28		
Leonard	Classics 32	Composition 12	Rhetoric I 24	Classics 33		
Ten Eyck[1]						
Call[1]		Farm Mech 5	Mech. & Mgt 20		Farm Mech. Lab. M. 8-12 A. M. 5	
Scudder	Agriculture 29				Crop Production II 7	
Calvin	Home Nurs 36	Elective 21	Therapeutics 17-19		Special 5	
Dow	El. Cooking[2] 6				Dom. Sci. III T+T 16, W+S 14	
Willis	Summer course in cooking May 21					
Russell			El. Cooking[2] 19		Laundry W 14, F 14, S 15	
Price	Civics 30	Am. Hist 23	Civics 32	Am. History 29		
Kammeyer	Economics 44		Pub. Spk II. 32-31		Pub. Skg. II. 28-24	
Erf[1]						
Shaffer						Drill 182
Cortelyou	German VI. 16-16	German III 33	German II 15	German III 21		
Meinzer	German III 18	German II 30	Readings 21	German II 15		
Valley	Vocal 9	Vocal 19	Vocal 14	Vocal 14	Vocal 37	Chorus Thursday noon 128
Brown	Violin 12	Mandolin 10	Guitar 8	Violin 8	Violin 31 | Band Inst 24	Band 48 | Orchestra 7:30...28
Augspurger	Piano 12	Piano 12	Piano 14	Piano 14	Piano 13	
Latimer	Piano 14	Piano 13	Piano 9	Piano 15	Piano 19	
Schoenleber[1]		Medicine IV 6		Mat. Med 13	Obstetrics 8	
Barnes[1]	Gen. Path 3	Medicine III 5	Surgery III 5	Oper. Surg 6	Clinic 11	
Goss	Physiology 29	Physiology 40		Bact 16-17	Bact. Lab T+T 19, W+F 14	
Rogers	Anatomy II and Lab. P. M. 13		Comp. Phys 15		Phys. Lab W 28, Th 28	
Kinzer[1]		Elective 14	An. Husb 26			
Rickman-Rodell	Printing 5	Printing 2	Printing 3	Printing 6	Printing T+T 12	Printing 13
McFarland	Bookkeeping 21	Bookkeeping 12	Bookkeeping 31	Arithmetic A 37		
Holroyd	Geom II 21	Algebra II 38	Algebra III 17	Algebra I 22		
Short	Med. Hist 49	Med. Hist 49	Anc. History 35	Anc. Hist 35		
Thompson	U. S. Hist. B 13	U. S. Hist. A 25	Physiology 20	Geography 7		
Furley	Grammar A 25	Adv. Gram 34	Grammar B 8	Composition 26		
Reynolds	Phys. Geog. II. 11	Phys. Geog. I 20	Phys. Geog. II. 15	Phys. Geog. II. 18		
Dunlap	Composition		Rhetoric I			
Train		Arithmetic B 10				
Barbour					Phys. Train 19 | Phys. Train 15	Phys. Train 22
Becker	Sewing II 10			Sewing III 19	Dressmaking T+T+S 22	
Cowles		Sewing I 11	Sewing I 11	Sewing II 11		
Stump	Sewing II 14			Sewing III 16		
Lund					Traction Engineering	56

[1]Experiment Station Work. [2]Alternate days.

THE INDUSTRIALIST

Published weekly during the College year by the Printing Department of the

Kansas State Agricultural College

Manhattan, Kansas.

PRES. E. R. NICHOLS.....Editor-in-Chief
PROF. J. D. WALTERS.....Local Editor
PROF. J. T. WILLARD.....Alumni Editor

Local Notes.

The annual class book will be out by June 1.

Instructor Freeman had a tussle with la grippe last week.

Asst. Theo. H. Scheffer went to Stockdale on Friday to attend a farmers' institute.

The next annual meeting of the Woman's State Federation will be held in Manhattan.

Another victory! May 14, K. S. A. C. *vs.* State Normal. Score 6:1 in favor of College.

Professor Erf is contemplating to build an additional class room in the attic of Dairy Hall.

The Alpha Beta Literary Society will render a play, "Liberty Corners," in the College Auditorium on Friday night, May 24.

Regent Story and Professor Kinzer started on a trip through eastern Kansas and northern Missouri this week to look up some shorthorn bulls.

A fine Duroc-Jersey male has been received by the Animal Husbandry Department from the herd of Grant Chapin, Green, Kan. He is a grandson of the famous "Ohio Chief," well known to all hog raisers.

President Nichols was in Topeka on Tuesday to confer with State Architect Stanton and State Printer McNeal. The State printer assured him that this year the catalogue would be completed before Commencement.

The returning baseball team was received at the Union Pacific depot by five hundred students and the College band. The team won two games from Emporia, but was defeated by Washburn, at Topeka, by the close score of 8:7.

The Y. W. C. A. girls, 175 in number, were entertained Saturday evening from eight to eleven by Mrs. E. R. Nichols at the President's home. The girls were received by the advisory board. Several musical numbers were given, and Miss Ada Rice served punch.

Senior student Henry W. Brinkman, who furnished the plans and specifications for the new Maynard School at Emporia, reports that the contract for the building has been let and the building has been started. He went to Emporia, May 3, to make the necessary surveys.

The Riley County Normal Institute will begin June 3, in Central school building in this city. The faculty will consist of Supt. Nathan T. Veach, of Atchison; Superintendent Griffee, of Jewell, and County Supt. Hannah Wetzig.

Hon. A. Hohn, of Marysville, Kan., and a number of his townsmen visited College last Thursday and inspected the milking machine, of which they had heard a good deal, both pro and con, among the dairymen of Marshall county.

Assistant W. H. Andrews went to Junction City, May 11, to deliver the commencement address for the common-school graduation of Geary county. There were about sixty graduates, many of whom will enter the Agricultural College next fall.

County Superintendent Wetzig, of Riley county, is highly pleased over the result of the recent examination of those desiring to graduate from the county schools. Seventy have passed and will receive diplomas at Randolph the last week in May.

Last week the Veterinary Department was extremely busy with clinic work. Two horses from Randolph underwent serious operations. Several minor operations were also performed upon horses which were brought to the College hospital for treatment.

Professor Willard is attending the meeting of the Kansas City section of the American Chemical Society. The meeting is being held to-day at the University of Kansas, Lawrence. Professor Willard will take part in a discussion of "Some Problems Connected with Recent Food and Drug Legislation."

Miss Caroline Hopps, recently assistant in English here, writes of her continued interest in the institution and of her appreciation of the publications showing the College work. She had not realized before how interesting the INDUSTRIALIST is, but noted with disappointment the absence of locals last week.

Institute Superintendent Miller has for the last two weeks visited the county high schools of Cherokee, Columbus, and Altamount, for the purpose of introducing elementary agriculture into their courses of study and to establish closer relations between these secondary schools and the Agricultural College.

Mrs. Arch McKeever, of Topeka, mother of Prof. W. A. McKeever, died Tuesday last, May 14, at her home in Topeka. Her death resulted from the nervous shock caused by a fall upon the ice. Mrs. McKeever has often visited about the College. She was sixty-five years old and had been in Kansas forty-eight years.

The Union Pacific railroad has announced a round-trip fare of $1.55 to Topeka for parties who intend to attend the annual intercollegiate track meet, May 20. It is expected that a considerable number of students will go, though there has been but little enthusiasm along these lines the present year. We should be surprised if our boys would bring home any laurels.

The Library has just received a large box of valuable scientific books, and the assistants are busy cataloging them. Among the books received are Hutton's Gas Engine, Thurston's Steam Engine, Thoro's Outline of Industrial Chemistry, a large work on Monumental Staircases, two volumes of Sanders' Farm Buildings, etc.

The annual catalogue of the College, now in the hands of the State printer, will enumerate over 1920 names of students in attendance during the College year 1906-'07. As the document goes to press early in May, it will not contain the names of the students of this year's summer course in domestic science, nor the names of the students who enter after mid-term in the spring.

The Manhattan road convention, Wednesday, May 15, was well attended. The prizes for making good roads in Manhattan township were awarded at the Commercial Club hall. The grand prize of $50, for the best mile of road, was given to John B. Collister, and the prize of $25 to J. W. Selvidge, for the second best mile of road. On each of the four rural routes one or more contestants won prizes of $10 for the first, and $5 for the second best mile.

S. W. McGarrah, formerly the proprietor of the Manhattan *Nationalist*, has bought the Manhattan *Mercury*. Mr. McGarrah is a good writer and as the *Republic* and the *Nationalist* are also in good hands Manhattan may rest easy. There is not a city of 5000 inhabitants in America provided with three stronger home papers, not to speak of the College publications—the INDUSTRIALIST, the *Students' Herald*, the *Agricultural Review*, and the *Jayhawker*. Lieb Vaterland magst ruhig sein!

Shige Suzuki, for two years a special student in dairying at this College, writes to Professor Walters from Yokahoma, Japan, where he arrived on April 6, that he landed in the "Flowery Kingdom" in excellent health; that he had read English classics and American agriculture while on board the steamer; that inside of another day he would meet his mother and grandmother, and that he never would forget America and the Kansas State Agricultural College. Shige is a good student and a noble character.

Excursions to the Agricultural College have become decidedly popular of late. On Friday the College was visited by a happy crowd of three hundred people from Clay Center and vicinity. They came here by special train over the Rock Island and stayed with us all day, visiting the museums, shops and barns in the forenoon and listening to a rehearsal of the Music Department and witnessing a dress parade of the cadets in the afternoon. At 3:50 the second baseball team of the College played the high-school team of Clay Center a game at the athletic park, which was well attended and resulted in a score of 3 to 2 in favor of our team. Our visitors from Clay were an exceptionally bright and well behaving lot of young people, and we have no doubt that many of them will become students here next fall. We feel like saying, come again!

Reverend Hulbert, of the Bethel mission in "the Kansas City Patch," that is, the packing house district, conducted chapel exercises for us on Saturday morning of last week and spoke to the students of the awful conditions prevailing there among the ten thousand packers and their families, and the necessity of doing mission work among them. According to the reverend's remarks, a jungle thicket of "Darkest Africa" is a veritable Sabbath-school compared with the "Patch" on Saturday night and Sunday.

Senator Tilman filled the last number of the society lecture course on May 13 with a lecture on "the Race Question." His position on the question is well known and he certainly expresses it in a positive and frank manner. He says that the whites of the South cannot permit the negro to dominate in politics, and predicts the race troubles to continue indefinitely. After hearing his masterly presentation of the case one can hardly escape sharing in his fears and wishing for a Moses who might lead the race out of "Egypt." The senator's delivery is powerful.

The Department of Domestic Science is conducting an interesting experiment concerning the College girls' diet. Twelve healthy young women were selected a month ago and weighed. They have now been fed for four weeks on an accurately determined diet, prepared by themselves. They were allowed no other food of any kind. All food and all waste were carefully weighed, and these students were pledged to sleep and exercise normally every day. Two that had unusually hard tasks, being connected with the Ionian play, maintained their weight. The other ten gained from one to six pounds during the four weeks. The diet consisted of an abundance of fruit, meat once a day, eggs, milk in large quantities, and such other seasonable articles as could be obtained. The figures are not fully worked out as yet, but it is expected to publish them in the INDUSTRIALIST within a few weeks. The experiment was undertaken to prove the amount and cost required for wholesome student food.

The College band has under consideration arrangements for concerts in Wamego, Manhattan, Salina, Ellsworth, Marysville, and Wichita. There is also under consideration a trip of several weeks this summer, playing at parks and Chautauquas in Oklahoma, Texas, and Arkansas. Under the leadership of Asst. Prof. R. H. Brown, the band has become highly proficient—the equal of many professional organizations. The band has forty members. In its concert work it is assisted by a soprano, harpist, and accompanist, and offers splendid programs. The instrumentation is as follows: *Piccolos*—L. W. Lawson, H. Landis. *Saxophones*—M. O. Nyberg, G. Bartholomees. *Clarinets*—F. W. Grabendyke, Chas. McKirahan, G. R. Eaton, H. E. Hershey, H. P. Bates, J. Tinkham, J. R. Carnahan, J. L. Whipple, P. E. McNall, J. J. Price. *Cornets*—A. J. Cowles, L. A. Sturgis, J. C. McCanlass, W. King, D. Jackman, F. Lewis, P. V. Kelly, J. H. Payne, K. Phillips. *Horns*—R. R. Hand, L. G. Hoffman, E. May, R. Blair, C. Snyder. *Trombones*

—G. S. Christy, J. C. McClung, L. Runyan, E. E. Smith, F. J. Kirgis, R. Moorman, R. J. Boeche, D. Crowther. *Baritone*—A. G. Kittell. *Euphonium*—H. E. Bixby. *Bassoon*—L. Davis. *Basses*—A. W. Seng, H. E. Porter, R. R. Cave, G. F. Neill. *Drums*—L. L. Shaw, D. D. Gray, A. E. Fairman, K. March. R. H. Brown, director; F. F. Farrar, drum-major.

The following from the *Burlington Hawkeye* refers to the work of the former teacher of physical exercises at this College, Miss Gertrude Williams, now Mrs. Lundgren, teacher of calisthenics in the Burlington Y. W. C. A. Her friends at Manhattan will be glad to read of her success. "Standing room was at a premium at the Y. W. C. A. gymnasium exhibition given in the gymnasium of the Y. M. C. A. last evening. All available seating space was occupied and many stood. It was with difficulty that a late comer could make his way to the doors of the gymnasium, so crowded were the entrances. The success of the exhibition was due to the hard work of the young ladies themselves, and also to the patience, perseverence and skill of their instructor, Mrs. C. B. Lundgren. She has a right to feel proud of the showing made by her class in last evening's exhibition."

Musical Recital by the Music Department, College Auditorium, May 23, 8 P. M.:

1. Selection ..... ——

ORCHESTRA.

2. Faust Fantasie ..... *Leybach*

EVA REES.

3. Courier Of Moscow ..... *Rodney*

R. R. CAVE.

4. Valse For Left Hand ..... *Lack*

OLGA DAHL.

5. Andante Caprice ..... *De Beriot*

GEO. BARTHOLOMEES.

6. Cachoucha Caprice ..... *Raff*

IRENE INGRAHAM.

7. For All Eternity ..... *Mascheroni*

DELIA BLANCHARD.

8. Last Hope ..... *Gottschalk*

ESTHER CHRISTENSEN.

9. Valse Brilliante ..... ——

M. J. OTEYZA.

10. Menuet L' Anlique ..... *Paderewski*

MARION WILLIAMS.

11. (a) Tell Her I Love Her So ..... *De Faye*
(b) 'Tis All I Ask ..... *Robyn*

E. E. BEIGHLE.

12. Wedding March ..... *Mendelssohn*

TILLIE KAMMEYER, MARIE COONS,
ESTELLA ISE, CLARA WOESTEMEYER.

(Two pianos.)

Prof. J. E. Kammeyer delivered the commencement address at the closing exercises of the high school at Blue Rapids, Kan., Friday, May 17.

Alumni and Former Students.

J. W. Fields, '03, was graduated from the Western Dental College, Kansas City, Mo., May 8.

Clay E. Coburn, '91, and wife are happy in the birth of a son, April 17. He has been named Donald Fairchild.

Changes of address: A. E. Blair, '99, 715 Henton Avenue, Topeka, Kan.; C. C. Smith, '94, Pomona, Cal.; A. E. Oman, '00, Missoula, Mont.

Edith Goodwin, '03, R. T. Kersey, '04, and Marcia Turner, '06, took examinations in the professional studies for State teacher's certificate this week.

C. C. Smith ['94] writes that he has found the place he has been looking for for thirty years and asks to have his paper sent to Pomona, Cal.—*Mercury.*

Bion B. Smith, formerly of Solomon, Kan., third-year student in the fall of 1879, visited the College last week. He has spent his long absence mainly on the Pacific coast. He has recently sold his mercantile business and bought a farm just across the line in British Columbia. His post-office address is Cloverdale. Professor Walters was about the only recognizable landmark here.

Miss Gertrude Coburn, '91, and Mr. Theodore Jessup were married at the residence of Secretary and Mrs. F. D. Coburn, Topeka, Kan., Thursday, May 9, and are now at home in Hinsdale, Ill. Hinsdale is just outside of Chicago, where Mr. Jessup is in business. Mrs. Jessup has a host of warm friends who will unite in wishing her the utmost joy in her new relation, and her husband is much to be congratulated.

N. A. Richardson, '80, San Bernardino, Cal., writes as follows: "I have just heard from Darwin S. Leach, '81. His address is San Juan, Porto Rico, care of Y. M. C. A." Mr. Leach has not been heard from for a number of years and his old friends feared that he was no longer living. The students of his time will remember him as one of the most brilliant students in the institution and the valedictorian of his class. They will hope that he may be with us at an early reunion.

Harriet (Nichols) Donohoo, '98, after a trip to Kansas City, is visiting the College, her sister and friends here, and will also visit in Herington and Liberal on her return to her home in Tucumcari, N. M. Her husband, R. P. Donohoo, is county clerk and register, and Mrs. Donohoo is his deputy. By doing most of the work of the office she enables her husband to contribute his share to conducting a thriving real estate business. They have bought a farm near Tucumcari and are converting it into an attractive home.

Miss Minnie Reed, '86, teacher in the Kamehameha School for Boys, Honolulu, T. H., is planning a visit to the United States this summer. She will sail June 3, and hopes to reach here before Commencement. She will, of course, visit the home people, but is planning to go on to Washington, D. C., to visit the Department of Agriculture, and will also visit biological laboratories elsewhere in the East. She has recently completed a bulletin for the United States government on the "Edible Algæ of the Hawaian Islands." The preparation of this bulletin has taken her to the seacoast of every island. She has secured many interesting pictures and hopes to defray a part of the expense of her trip to this country by giving illustrated lectures on Hawaii. She will return to the school next year and expects to undertake some additional research work for Uncle Sam.

The graduates and former students of the College residing in Topeka have formed an Alumni Association. It was organized Thursday evening, May 9, at the residence of C. M. Buck, '96, and Winifred (Houghton) Buck, '97. The officers elected were: President, E. G. Gibson, '96; vice-president, C. M. Buck, '96; secretary and treasurer, J. H. Whipple, '04. The following named were present: Mr. and Mrs. J. H. Whipple, Mr. and Mrs. H. N. Rhodes, Mr. and Mrs. W. A. Turner, Mr. and Mrs. W. M. Amos, Mr. and Mrs. C. W. McCord, Mr. and Mrs. C. M. Buck, Mrs. Mackey, Mrs. Margaret (Norton) Parsons, of Manhattan, Misses Claire Mackey, Helen True and Maude Currie, and Messrs. E. G. Gibson, L. W. Hayes, and C. H. Popenoe. The next meeting will be held May 30, at the home of H. N. Rhodes, '96, and Wilma (Cross) Rhodes, '04, at which time they hope to add largely to their membership.

O. L. Utter, '88, 1902 Freeman Avenue, Cincinnati, O., is superintendent of the Cincinnati Camp Meeting Association, and sends the following interesting letter to President Nichols: "I want to thank you for the INDUSTRIALIST, which reaches me each week. You will pardon me, I am sure, if I say that the part concerning 'Graduates and Former Students' is the part of the paper that interests me first of all. Yet I am often interested in the discussions and papers found therein; having been through the work there, I have an interest in the advancement of agriculture and the various things which help on the development of the great State of Kansas. I have been much pleased to find, in speaking to farmers and men in the industrial pursuits of life, that I could use the knowledge gained there in so many ways to illustrate or explain the truth that I desired to bring before them. No knowledge seems to come amiss in the great work of the Kingdom of God, for His hand may be seen in all His works. I have thought it so strange, when K. S. A. C. graduates are scattered almost all over the world, and when they are so numerous in Kansas City and Chicago, that none at all come to Cincinnati. This is a great, rushing, busy city, and there must be good openings in industrial lines of work. Send some of them this way and let us have an association."

Agronomy and Horticulture Number

THE

INDUSTRIALIST

Vol. 33 **No. 30**

Issued Weekly By

Kansas State Agricultural College

Manhattan, Kansas

Department of Agronomy

A. M. TenEyck

Department of Horticulture

Albert Dickens
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Published by
PRINTING DEPARTMENT
J. D. Rickman, Supt.

Entered at post-office, Manhattan, Kan., as second-class matter. Act of July 16, 1894.

THE INDUSTRIALIST.

VOL. 33. MANHATTAN, KAN., MAY 25, 1907. No. 30

Agronomy at the Kansas State Agricultural College.

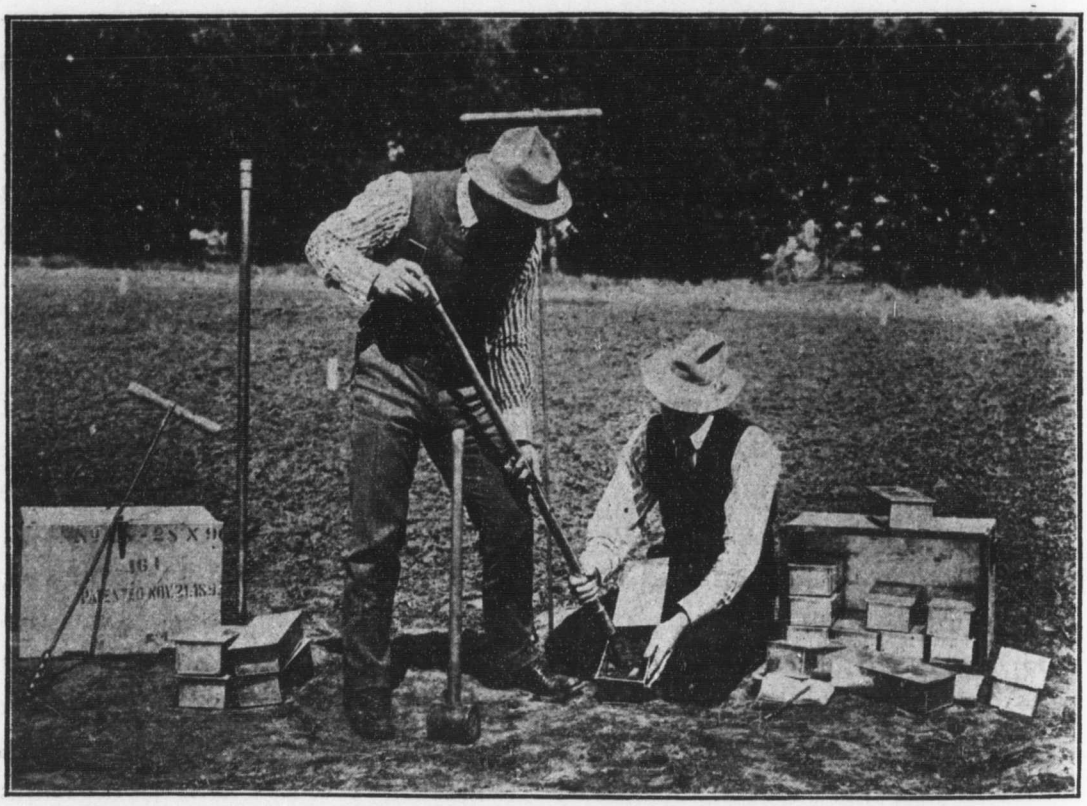
Agronomy is a division of agriculture. The word means, primarily, the management of land and crops. Agriculture in its broadest sense means not only the cultivation of the land and the production of crops, but also includes stock-raising and dairying. Agronomy includes four general lines of study: Soils, crops, farm management, and farm mechanics. Agriculture I, as given in the College curriculum, takes up the elementary study of soils and crops and serves as an introduction to the several branches of agriculture. All male students are required to take first-year agriculture. In this study, in a simple way, the whole subject of agriculture is briefly presented to the student from appropriate text-books, accompanied by lectures and demonstrations by the instructor. The object in teaching agriculture to all students, whether or not they intend to follow the profession of agriculture, is this: Agriculture has to-day attained to that high degree of development which entitles it to be classified as an art, about which every well-educated person should be well informed. To be a well-educated citizen, whatever the profession or occupation, a man should have a knowledge of the primary facts and principles of agriculture.

It is proposed to make the agricultural studies thoroughly practical. Agriculture is a business; it is not truly a science, but it depends upon science, and to understand the "principles of agriculture" requires a knowledge of many sciences. Physics, botany, chemistry, geology, and mechanics teach theory and science, while the studies in agriculture assist the student to make the application and put the theory and science into practice on the farm. The regular agriculture course extends over four years and includes practically every subject that pertains to the handling of a farm.

CROP PRODUCTION.

Crop production is one of the most important subjects taught students in agriculture. This subject includes the study of the farm crops as to the preparation of the seed-bed, planting, culti-

vating, harvesting, storing, and marketing. A careful study is made of each crop with reference to the plant, its root system, and method of culture. Under this head is included the rotation of crops, maintaining of soil fertility, the application of manures and fertilizers, destruction of noxious weeds and injurious insects and the prevention of plant diseases. Each of the staple crops is taken up in order, and its history, characteristics, uses, methods of culture, etc., discussed. Crops are also studied in the class



Students Taking Soil Samples.

room as to their special uses as hay, forage, silage, pasture, soiling, green manure, cover crops, etc. New crops are also investigated. All the different crops are grown on the College farm, so that the students may see them, or at least see samples in the class room, and thus become acquainted with their characteristics and the best methods of handling them.

Special attention is given to seed selection and seed breeding. As a sample of the practical knowledge gained, students are given practice work in the scoring of corn and in judging all common cereals according to standards of inspectors and buyers or according to other recognized standards of perfection. It is surprising that few farmers can pick out a "good" ear of corn before being carefully instructed and trained in the vital points,

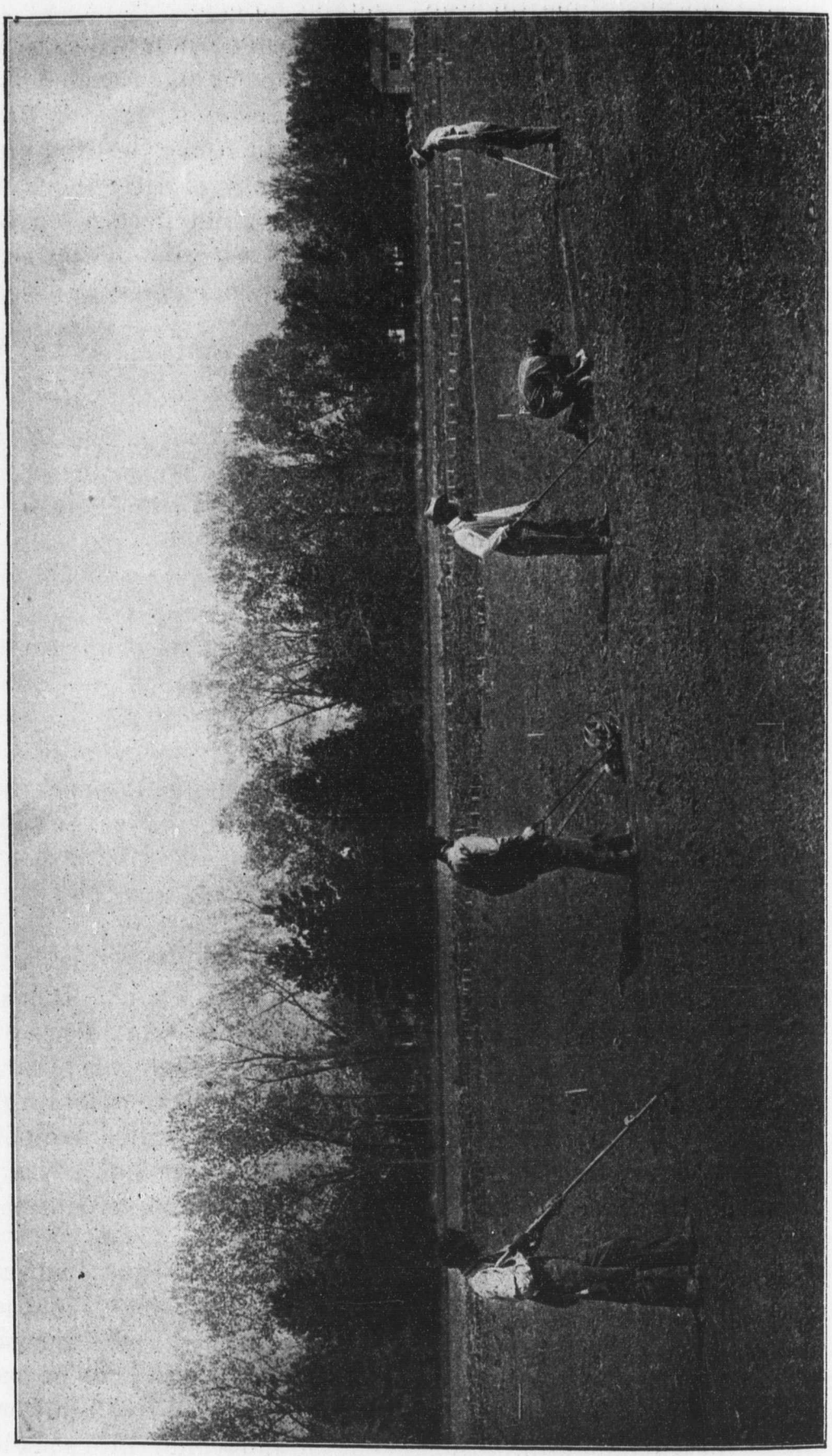
both as to the desirable qualities and the defects. It is just as important to select and grow a perfect type of corn or wheat as it is to select a well-formed hog or a proper type of dairy animal for breeding purposes. A higher per cent of protein, greater productiveness, and other valuable qualities which may be bred into corn by careful and intelligent selection, may greatly increase the value of this crop to the farmer. The training received by the student in agriculture in this line becomes a valuable possession, both financially and otherwise, when he engages in practical farming.

FARM MECHANICS.

The tillage of the soil and planting and harvesting of crops, the operation of farm machinery and construction of farm buildings, and in fact a larger part of the work on the farm involves the application of physical laws and principles. Farm mechanics is the name of that branch of study which deals with the larger part of the physical problems of the farm. This is one of the most interesting and valuable agricultural studies.

In the introduction of this study some time is spent in reviewing principles in physics, such as constitution of matter and kinds of force, while the terms, work, energy, machinery, etc., are defined and their relation to the mechanics of the farm established. Several lectures are devoted to the elements of machines, discussing the principles involved in the use of the lever, evener, wheel and axle, pulley, inclined plane, etc. The several classes of farm machinery are taken up in their order and studied as to the principles of construction and use of each machine, and attention is given to the operation and care of farm machinery and the building of machinery sheds. On three-fourths of our Kansas farms much of the farm machinery is allowed to remain out-of-doors the year round. This is a great waste. Such machinery not only wears out in one-half the time, compared to machinery that is well cared for, but it gives a poor grade of service while in use. In this course the fact is demonstrated that the average Kansas farmer can save thirty-three per cent on the investment by building a shed and shedding his machinery.

The subject also includes the principles of the study of draft as related to the horses, the wagon, and the road over which the load is drawn. Attention is given to the construction of roads, irrigation and drainage systems, and other mechanical problems of the farm, while the various farm motors, as the horse, tread-power, sweep-power, steam-engine, gasoline-engine and wind-mill are made familiar to the student in their construction and the requirements



Students Comparing Methods of Seed-Sowing.

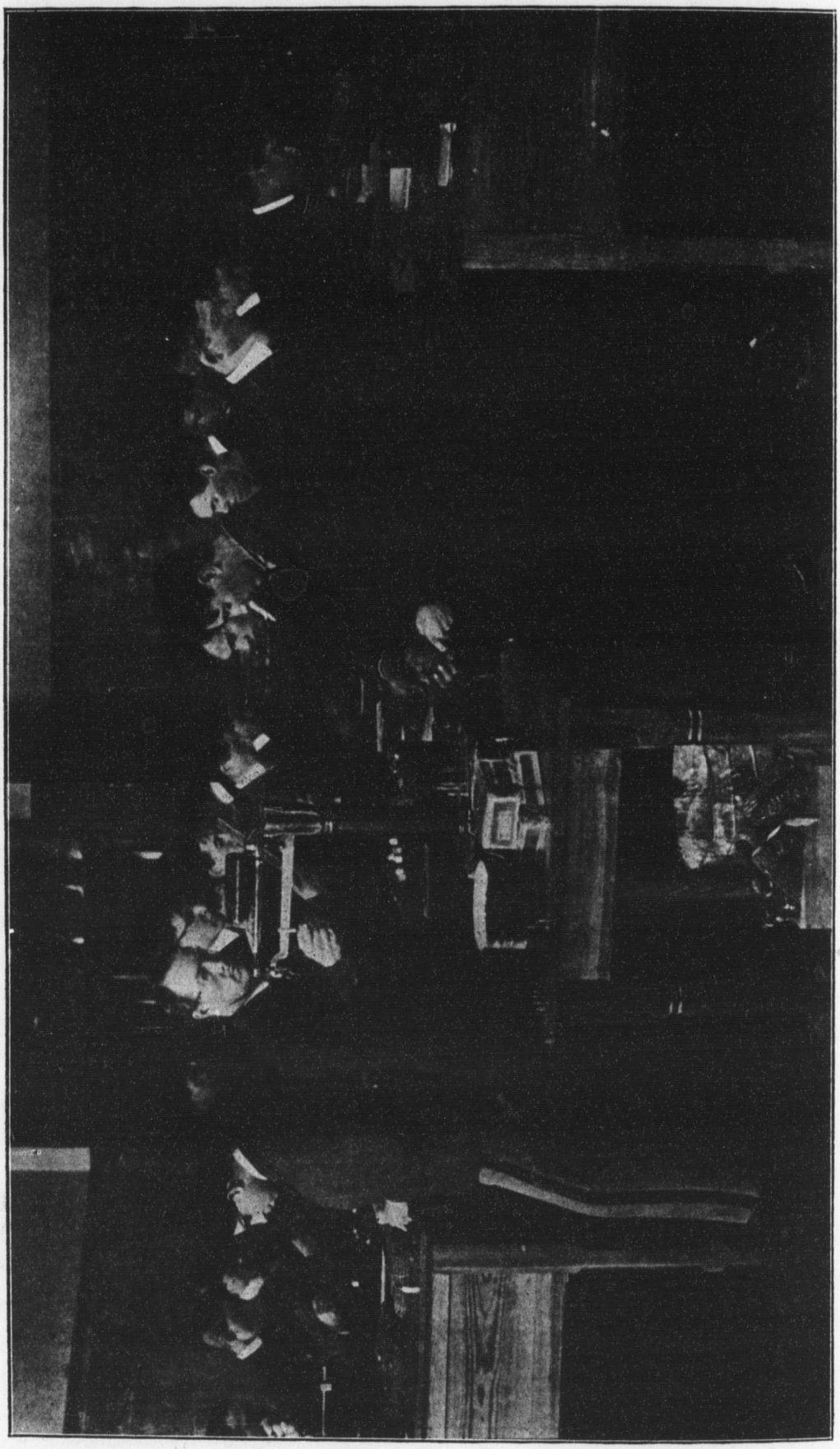
necessary to operate them successfully. Some attention is given to rural architecture, which includes the study of strength of materials, plans and specifications for buildings, and the essential factors to be considered in the construction of buildings, such as warmth, light, and ventilation, with reference to the comfort of the animals housed, handiness in use and economy in construction. There is no study in the Agricultural College course which offers greater attraction to the student than farm mechanics. It should not fail to secure the interest of every young man who expects to follow agriculture as a profession, and there is no more valuable or practical study taught in our Agricultural College.

FARM MANAGEMENT.

Farm management is the practical application of all the facts, principles and sciences related to agriculture, and includes the conducting or management of the farm, not only as regards present success and profits, but also with reference to the future prosperity of the farm. It is the *crowning study* in agriculture. A knowledge of the sciences related to agriculture and skill in producing large crops and fine herds are important factors in farming, but proper management of the farm and the farming business is the essential factor which largely determines a farmer's success.

The study of farm management is a study of the farming business with all its wide variations of class, character, and place, and it is possible in the half-term which is given to this subject to present briefly only some of the more important phases of the subject, such as, "Choosing a Farm," "Laying out the Farm into Fields," as regards plan, arrangement, rotation of crops, fences, drainage; "Selection of Building Site," with reference to healthful location, good water, convenience to farming operations, public highway and market, etc.; "Plan and Arrangement of Building Site," with reference to location of buildings, yards, garden, fruit orchard, etc. Some attention must be given also to the "Farm Equipment," which includes not only the buildings but also the stock and machinery.

"Soil management" is really a part of farm management, and refers to the proper tillage of the land under cultivation, the saving and handling of manure, and the use of chemical fertilizers. Under this head are discussed the means and methods of preventing the waste of land by wind and water and the rotation of crops with reference to maintaining soil fertility, and producing the largest and most profitable yields. "Crop management" refers to crops to grow, methods of culture, harvesting, storing and marketing of farm produce. "Live-stock management" includes not



Students Judging Corn.

only methods of caring for stock in the way of feeding, shelter, etc., but also methods of breeding and feeding for market, time to sell, etc.

One of the most important subjects considered in farm management is "Farm Accounts." Under this head are presented methods of keeping farm accounts methodically in books. This is perhaps the most important part of farm management, and the one which is most neglected by the farmer. A careful farmer should keep accounts with every important enterprise of the farming business, and his ledger should contain, beside the accounts with persons with whom he deals, accounts with corn field, oats field, hay field, pasture, cattle, hogs, horses, machinery, and the like, and at least once a year he should balance these accounts and thus determine not only his gain or loss, but also what enterprises have paid best, or which have proved a costly failure, thus enabling him to escape losses and make larger gains. The student in farm management is not only informed regarding these things, but he is required to carry out a theoretical business for a year, keeping a complete set of farm books.

Young men who take the agriculture course will not only be well prepared to carry on various lines of farming successfully for themselves, but they will be competent to act as foremen, and, after some experience, as managers and superintendents of large farms or other agricultural interests. They will also be prepared to take positions with our agricultural colleges and experiment stations as instructors and assistants. More than this, the graduate from the agriculture course, whatever calling he may choose or wherever he may make his home, will be a strong and influential citizen as well as a skillful producer, because, while many studies of this course are primarily practical, emphasizing the business side of life, yet enough "culture" studies are offered to give the student a well-balanced and well-rounded education.

The time has passed when an uneducated and unskilled man can become a successful farmer and a man among men. It is not so easy to make a good living at farming to-day as it was forty years ago, or even twenty years ago. The soil is poorer, and competition is greater. There are many educated, hustling men engaged in the various lines of farming to-day, and if one wants to compete successfully with them he must be educated also. He must understand the soil and the great principles of cultivation, aeration, and soil-moisture conservation; he must know the science of plant growth and propagation, must know the chemistry of the plant and of the animal, and must learn the principles of

animal nutrition and balanced rations in stock feeding; must study the animal and be practiced in stock judging in order to select breeding stock, and he must know a thousand things about agriculture if he hopes to compete successfully with those who have knowledge and training in these things.

The motto of the Agricultural College is "Practice with Science." This does not mean, however, that the agriculture-course student is put to work on the farm. The agriculture course is a course of study, not manual labor. Some manual labor is required as practice work in the field and laboratory. The student is taught to handle tools in carpentry and blacksmithing; he is given some practice in handling stock, grafting, tree-planting, and general farm management. He is not sent into the fields to plow, harrow, or cultivate, but he has an opportunity to observe the best methods of farm practice and become acquainted with the great principles of agriculture which apply everywhere and upon which crop production and the breeding and raising of stock depend.

Every young farmer in the State of Kansas should take the agriculture course. It does not matter so much how long a man lives, as how much he lives, and one can live so much more and accomplish so much more after spending four years in college that the time is never missed. Every young man can find means to carry him through college. "Where there is a will there is a way."

A. M. TEN EYCK.

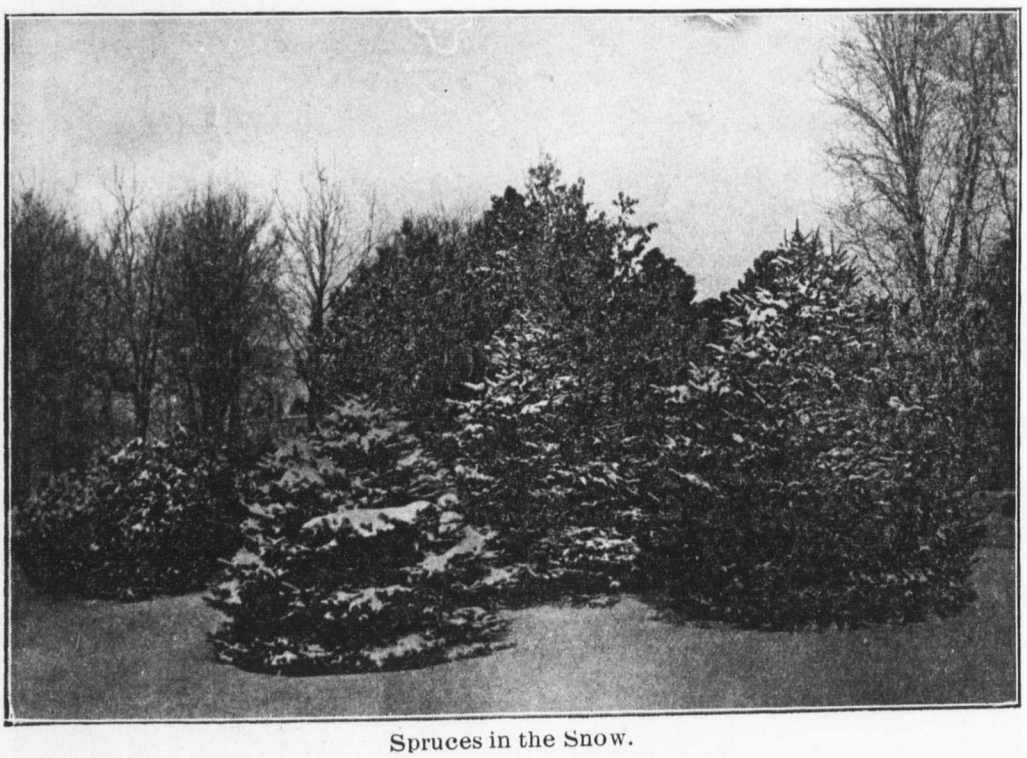
Horticulture at the Kansas State Agricultural College.

The class work of the Horticultural Department has always been characterized by full recognition of the fact that horticulture, like spelling, is both a science and an art. It is not sufficient that the student know the scientific principles that underlie all successful garden work, but he must be able to do it. We try to teach the "how" as well as the "why."

In the first term's work in horticulture, required of all students in the agriculture, domestic science and general science courses, the subjects considered are the principles and conditions underlying successful plant growth, with methods of propagation, transplanting, pruning and protection, and fruit production. The location of farm homes and orchards, garden and timber plantations are briefly considered. Students in the agriculture course have in their junior year a term's work in vegetable and small fruit growing, which is technical and deals with the preparation and improvement of soils, use of fertilizers, barn-yard and green

manures, marketing and storing, and specific requirements of various garden and small-fruit crops.

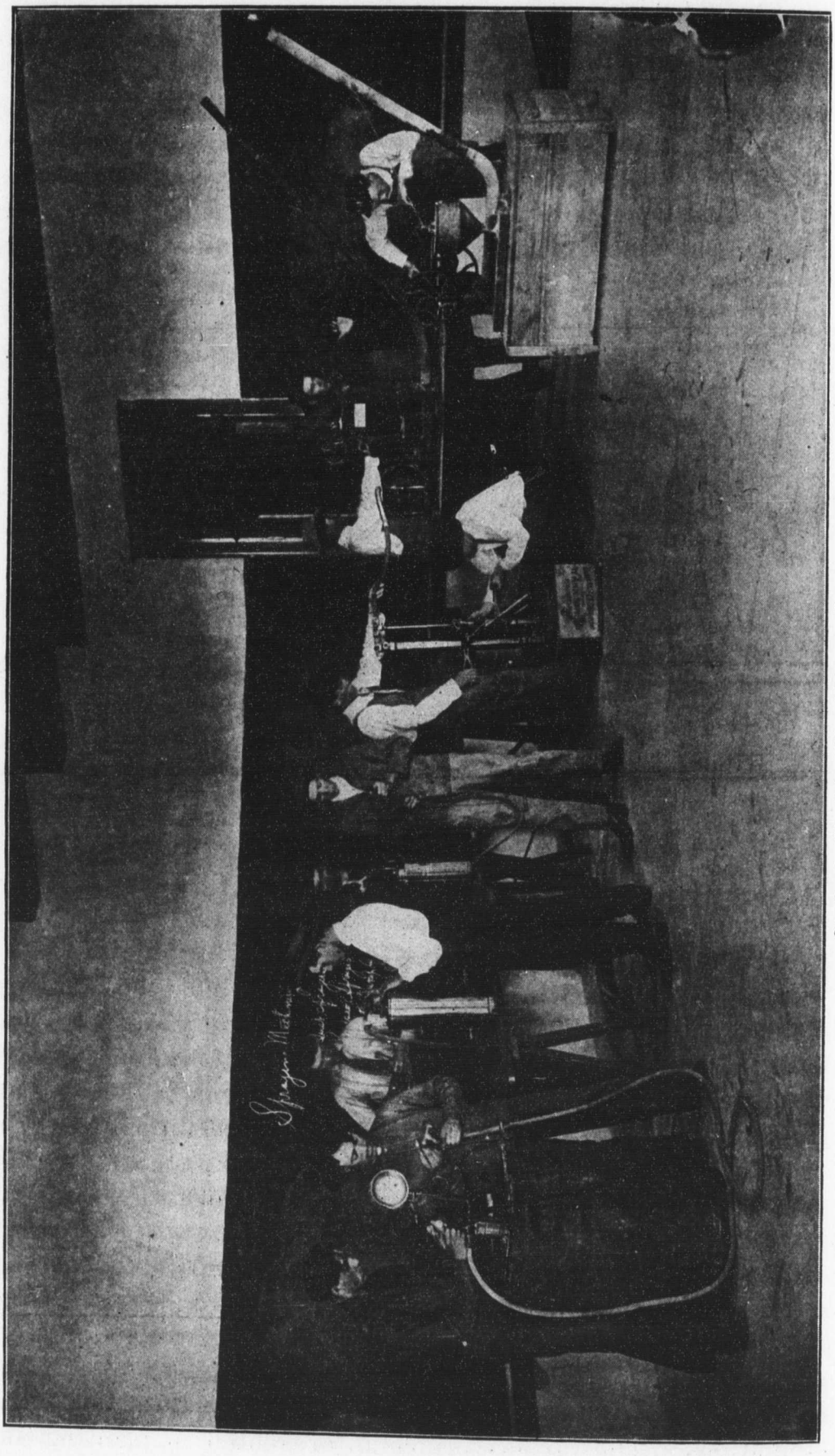
Students desiring further training in horticulture may elect advanced work along the lines of pomology, forestry, floriculture, or ornamental gardening. Classes in pomology are formed each fall term, and students are given every opportunity to learn fruits. In connection with the work of the text, each student is required to become acquainted with many varieties of fruits. The amount



Spruces in the Snow.

of work accomplished in the term usually includes the description and identification of about thirty varieties of grapes, forty of apples, ten of plums, eight of pears, and a few of oranges, lemons, and persimmons. In forestry the student learns trees, their requirements, growth, uses, and means of establishing and maintaining forest areas, methods of measuring and estimating timber yields, and he has an opportunity to do real work in the various operations of forest practice.

In floriculture and ornamental gardening a study is made of the use of plants for æsthetic results, and the plant is regarded as material for artistic use. The College campus gives the student abundant opportunity to form the acquaintance of the very many trees, shrubs and flowers and estimate their value alone and in combinations. The various problems presented in planting and improving city lots, farm homes, roadsides, streets, parks and



Students Studying Hand-Power Sprayers.

cemeteries are considered. In all the teaching work, attempt is made to develop the student's power of observation and to better his acquaintance with the out-door world. The belief is held that horticulture offers material for the broad development of men and women as well as for earning a livelihood. We believe that the best education includes an acquaintance with trees, flowers, and fruits, as well as history and literature; that true culture includes not only appreciation of great men and their books, pictures, and music, but the ability to see the beauty and use in the basket of fruit, the crocus in the grass, the spruce in the snow.

ALBERT DICKENS.

Learning by Doing in Horticulture.

The laboratory and field work as given by this department aims to help the student to get a better understanding of all the principal operations connected with the propagation and care of vegetables and fruits. This is true, although to a less extent, of forest and ornamental trees and shrubs. This work is supplementary to the instruction given by lectures and by means of textbooks. As a result of this training in the handicraft work of the orchard, vineyard, and garden, two objects are secured: First, knowledge so gained may be a material help to the student in after years on his own farm in meeting and solving the many problems of farm life. Second, this knowledge so gained may help one to become a practical and technical horticulturist, to be a teacher of such work in agricultural schools and colleges, an expert worker in experiment stations and in nurseries.

The economic plants of garden and orchard are studied in all their important relations, one to the other, to the soil, to the climate, to all factors of environment. Not alone does each student meet with and learn the things of primary horticultural importance, but also things of entomological and botanical importance.

The subjects and their sub-divisions which the student takes up in this connection are many. He studies the gathering, storing, selection and testing of garden, orchard and forest-tree seeds; the better ways of treating seeds of particular plants, as for instance apple seeds, celery and red cedar in order that they may germinate; the time and manner of sowing seeds; the method of insuring and hastening germination of seeds; the making and use of hot-beds and cold frames; the care of the resulting seedling as regards light, moisture, temperature, and air; the transplanting of the seedling—when and how; the care in setting

the plants; the pruning of the roots and branches; the setting of an orchard, vineyard, and small-fruit plantations; the cultivation and growing of cover crops, pruning, spraying, winter protection, gathering and packing of fruit.

The control of plant diseases and insects is one of the most important subjects. Spraying is studied in all its phases. The student makes a study of the uses and effectiveness of different kinds of spraying machines and different kinds of insecticides and fungicides. He studies the proper methods of mixing materials used in various kinds of insecticides, also the time of applying, the amount to apply, the cost of the materials and the total cost of spraying. In this work the student becomes more or less familiar with the insects or diseases so that he may recognize or at least suspect the presence of the harmful pests and be able to plan warfare accordingly.

Plant propagation, aside from that by means of seeds, which has already been mentioned, is studied by the student, so that on leaving College he may be able to propagate the various kinds of fruit-trees by the different methods of grafting and by budding, or to propagate those plants which are generally and more properly propagated by layers or by cuttings. In the question of propagation the student is not only taught how to make the graft, how to cut and insert the bud, but he is also taught the great importance of the proper selection of the bud, the cion or cutting, especially as regards the parent plant from which they came. The evil effects of promiscuous propagation of varieties among fruits and vegetables is pointed out, and such practice is discouraged.

ROBT. E. EASTMAN.

Floriculture in the Agricultural College.

Floriculture is taught during the winter term to the second-year and short-course domestic science girls. It is also taught as an elective and in graduate work. This work embraces lectures on the cultivation of plants for the home and lawn, and laboratory work in propagating, potting and caring for plants, seed sowing, window gardening, transplanting of seedlings, and some ornamental gardening. The student is allowed a certain space in the propagating bed to experiment with cuttings. Each student is required to make a certain number of cuttings. After these cuttings are rooted, in from eight to twenty days, the student pots them into small pots and they are placed on the benches, watered, and left until it becomes necessary to repot the plants.

Tests are made with seeds to determine the per cent that will

germinate, and tests are also made in regard to the keeping qualities of various seeds. The student studies both the scientific and common names of all the plants on the College grounds and in the greenhouses. At present there are one hundred fifty varieties of plants in the greenhouses and about one hundred varieties of hardy plants in the outside gardens. Special attention is given to the preparation of soil for the different plants, and each student is required to mix the soil used for potting purposes. During the winter term eighty girls were enrolled in floriculture, and the interest manifested was very gratifying.

Next year, with the addition of a new and large greenhouse, the facilities for teaching this subject will be greatly increased. More attention will be given to laboratory work and ornamental gardening, and at the end of the term each student will be required to hand in plans for the beautifying of the home grounds. Frequent trips over the large campus help the classes to a better knowledge of shade and ornamental trees and shrubs and their uses. A study is made of the arrangement of drives, walks, trees and shrubs from a landscape point of view, and the students receive instruction on the making and care of lawns and the arrangement and care of flower-beds.

The injurious insects and plant diseases are studied carefully, and the standard remedies for each. Fumigation, spraying, watering and ventilation all get their share of attention.

Students who elect floriculture are able to get a more thorough course in this work. Greenhouse construction and management are then carefully studied, including heating and the best methods of ventilating. Experimental work claims a great deal of the student's attention, especially in cross-fertilization, grafting, and budding.

M. F. AHEARN.

At a recent meeting of the board of directors of the American Royal Stock Show at the Savoy hotel in Kansas City, plans were completed for the stock show at the Kansas City stock yards October 14. The lists of premiums were arranged and the manner of holding the students' contest decided upon. The students from agricultural colleges will enter a cattle-judging contest for prizes. Prof. R. J. Kinzer, of the Kansas State Agricultural College, and Prof. F. B. Mumford, of the Missouri Agricultural College, will arrange the details of the contest. The students' judging contest will take place two days before the fine-stock show opens, and will probably be more spirited than ever before.

THE INDUSTRIALIST

Published weekly during the College year by the Printing Department of the

Kansas State Agricultural College

Manhattan, Kansas.

PRES. E. R. NICHOLS.....Editor-in-Chief
PROF. J. D. WALTERS.....Local Editor
PROF. J. T. WILLARD.....Alumni Editor

Local Notes.

W. E. Mathewson arrived last Friday to take up his new work in the Chemistry Department.

Professor McKeever delivered the commencement address at Muscotah, Friday of last week.

The poultry department has six incubators at work this spring. One of them is run by electricity.

About thirty junior domestic science girls went to Topeka Monday to visit the hospitals and packing-houses.

The annual marshmallow roast and witch dance of the sub-freshman class will be held on top of Bluemont some night next week.

Professor Dickens and Assistants Scudder, Ahearn and Dean will address the Riley County Teachers' Institute the second week in June.

Professors Dickens and Popenoe and Superintendent Miller will address the Shawnee County Institute in June on subjects of agriculture and horticulture.

Contract for building the foundation walls of the new green-house will be awarded on June 8. The specifications for this work will be ready next week.

The College battalion and the College band will take a prominent part in the city memorial exercises on May 30. The battalion will fire the salute over the graves of the dead veterans.

Professor Walters is busy with the preparation of drawings and specifications for the building of a number of small cottages to be erected on the Ft. Hays Branch Experiment Station farm.

The College will build from 25,000 to 40,000 square feet of cement sidewalks and road crossings this summer. Advertisements calling for bids will appear next week, and contract will be awarded on June 21.

F. C. Harris, junior student in the architecture course, was last Tuesday appointed city engineer of Manhattan. Frank has been student assistant in surveying for several terms and will undoubtedly make a first-class surveyor.

The spring-term public recital of the Music Department was given on Thursday night in the Auditorium. It was a grand success, though the audience was not as large as was expected, owing to the student parade down town and the threatening weather.

Bids for the erection of the new Domestic Science Hall will be advertised for next week, and the contract will be awarded by the Board on June 21. The State appropriation for this building is $70,000.

The following dates are already arranged for football next fall term: October 7, College of Emporia; October 12, Haskell; October 19, Friends University; November 4, Ottawa; November 9, Washburn; November 18, Fairmount; November 28, State Normal; October 26, State University; the game with the State University will be played at Lawrence; the other games at Manhattan.

Pres. E. R. Nichols, of the Faculty, left for Lansing, Mich., on Friday to attend the annual meeting of the Association of American Agricultural Colleges and Experiment Stations. He will be absent for a week or ten days. Prof. J. D. Walters will hold down the executive chair during his absence. Hon. A. M. Story, president of the Board of Regents, will leave Sunday to attend the same meeting.

Professor Eyer has arranged for positions for the following senior electricals: Hubbard and Cassell go to the Hawthorne works of the Western Electric Company; Lupfer, Jorgenson, Coxen and Stauffer will become employees of the Westinghouse Electric Company of Pittsburg, Pa., while Kahl and Conwell will work for the General Electric Company, in Schenectady, N. Y. Two more students will probably go to the General Electric Company, and the Western Electric Company will take eight men for telephone work.—*Students' Herald.*

The Agricultural College did better at the State track meet in Topeka last Monday than we had predicted. Fairmount College stood first with 35 points, the State Normal second with 31½ points, and the Agricultural College third with 30½ points. Several of last year's records were broken, Ross on the pole vault making 10 feet, 6 inches, Young secured first places in the high jump, at 5 feet, 10 inches, and the broad jump at 20 feet, 5 inches. Seng got first in discus throw, at 105 feet, 7 inches, and the hammer throw at 99 feet, 6 inches.

The Farmers' Institute Department of the College has arranged with the industrial department of the Santa Fe railroad for an "alfalfa" train. It will start from Topeka on Monday, June 10, going first to Atchison, then to Leavenworth, then to Holliday and Olathe, then to Ottawa, Burlington, Garnett, Chanute, Girard, Cherryvale, Independence, Moline, Emporia, Osage City, east to Ottawa and back to Topeka by way of Lawrence, reaching Topeka on Saturday afternoon, June 15, at 2:35, where a big "alfalfa" meeting will be held in the Auditorium. The train will make seventy-two stops of about forty minutes each, and will cover pretty well all of eastern Kansas, touching twenty counties. The lectures will be given by Professors TenEyck and Roberts, Assistant Wheeler, and Superintendent Miller.

Early Tuesday morning two cock pheasants accidentally got together and a desperate fight followed, proving their superiority over the game cock as fighters, for before they were discovered they had fought to the finish, both being found dead on the battle-ground and so badly disfigured that they were unfit for mounting.—*Herald.*

Contractor L. Eversole, of the Y. M. C. A. building, has completed the work of excavating and is pushing the concrete and stone-work of the basement to the utmost. The soil was unusually hard and compact, which retarded the excavating probably a week, but in a few days the walls will begin to show on a level with the ground. Mr. Eversole has not, as yet, decided where he will get the heavy ashlar stone for the outside of the basement story above ground.

Another famous victory in the arena! On Wednesday and Thursday our baseball team vanquished the State University nine in two hotly contested games in the Manhattan Athletic Park, with scores of 4 to 3 and 6 to 5 in a twelve-inning game. Both teams did their best, and the audience was large and enthusiastic. In spite of a hot and dusty south wind, there were nearly 1500 tickets sold each day. This gives the Farmers all three annual victories over the K. U. teams. In the fall we beat them at football 6 to 4, and in the winter at basket-ball 29 to 25. What wonder when the students grew enthusiastic over their success and paraded Main street in an impromptu S. T. parade, enlivened by College songs and class yells, and that somehow the old bell in Anderson Hall began to ring, and rang and rang when victory was assured. Three cheers for the boys who won the battle!

Doctor Webster, of the United States Department of Agriculture, in charge of field and forage crop insect investigation, left here Saturday for Wellington, Kan., and Texas. His assistant, W. J. Phillips, went to Norton and will go from there to Nebraska. Doctor Webster was sent here to arrange with Professor Popenoe for some special experimental work and to investigate the wheat fields relative to injury from the green bug or other insects. He states that while there are green bugs in every field he and Professor Popenoe visited, it is his opinion that the injury here to the wheat is wholly from the weather, the injury by bugs being done in the southern half of Kansas and further south. In answer to the question, Are they a new thing in the West, or if not why the bugginess of the year 1907, he said: "The species of bugs making the trouble this year has been in all parts of the country for many years. Their rapid increase this year is the result of the cold spring. They breed in vast numbers in spite of frost, while their parasites breed only in warm weather, and had we had a warm April the number of the troublesome bugs would not have been above normal. Professor Popenoe says that wherever he has found these bugs he has found their parasites, which are increasing rapidly since the weather turned warm. Kansas wheat suffered from these bugs in 1890.—*Mercury.*

Alumni and Former Students.

M. R. Shuler, '06, has been reëlected teacher of science in the Holton school.

L. R. Elder, '06, is the author of an entertaining and meritorious short story in the *Century* magazine for May. It is entitled "The Destiny of the Uncle."

Miss Alice Shofe, '97, and now attending the State Normal, has accepted a position as teacher in a Freedmen's school in Virginia. Miss Alice is a daughter of George Shofe, of College Hill.—*Mercury.*

Isaac Jones, '94, writes that the prospects were never better at Etiwanda, Cal., for record-breaking crops of raisins and oranges. Mr. Jones' real estate is increasing in value at a tremendous rate. In addition to fruit he grows large quantities of potatoes.

Martha Pittman, '06, of the domestic science department of the Chilocco Indian School (Okla.), is making plans for a demonstration upon the stage by the eleven girls who graduate in domestic science at that institution. The occasion gives her an opportunity for much careful planning.

Cora E. McNutt, '06, teacher of domestic science in the Girls' Industrial School, at Beloit, Kan., finds there an ample field for executive ability and many hours of hard work. She is planning changes that will make the work easier for her and more beneficial to the girls in her charge.

Geo. W. Gasser, '05, will go to Rampart, Alaska, July 1. This is one of the agricultural experiment stations in charge of Prof. C. C. Georgeson, formerly of this institution. Mr. Gasser is at present taking special study in horticulture and serving as foreman in the Horticultural Department.

Dr. J. D. Riddell, '93, Enterprise, Kan., took in the ball game with K. U. Wednesday. He had the sand as well as the spirit to hold up the College end of the game and received the reward of an approving conscience. Mrs. Riddell, once Doris Kinney, had been visiting Mrs. Mayme (Houghton) Brock, '91, and the Doctor came down to accompany her home.

Earl Wheeler, '05, made a flying visit to the College on the 24th. He is still head of the department of electrical and mechanical engineering in the engineering school of the United States Army. This is a school for junior engineer officers which is conducted at Washington Barracks, Washington, D. C. Mr. Wheeler is now on a detail for some special work in the West.

Julia R. Pearce, '90, librarian here from 1894 to 1898, now has a very pleasant position in the physical laboratory of the Bureau of Plant Industry, with excellent chances for further promotion. When not on duty she has spent much of her time translating from the Spanish a book by Prof. H. Pidier, the French-Swiss scientist. This has occupied her for several months.

Born, May 20, 1907, to Mr. and Mrs. C. W. Morgan, a daughter, Anna Mabel. Mr. Morgan will be remembered as a member of the class of 1901.

G. C. Hall, '96, Manhattan, Kan., has started the *Rural Gazette*, a 26-page weekly agricultural paper, the subscription price of which is 25 cents per year. We wish Mr. Hall complete success in his undertaking.

Clara Barnhisel, '04, finds her work with the Indians in the school at White Earth, Minn., quite pleasant. She has been head matron and has thus learned something of responsibility. She would, however, prefer teaching people of her own race. She expects to attend the summer school here this summer.

In a recent letter Mrs: Nellie Kedzie Jones, '76, speaks of her continued interest in the work of the College and of pride in the work now being done in the Domestic Science Department. One who has put so much of herself into a department as Mrs. Kedzie did cannot but have an abiding interest in the department that received her service.

C. A. Hite, senior in 1904, 69 Arch street, New Britain, Conn., sends a picture postal card showing a Weber Steel and Concrete Chimney being built for the Western Maryland Railway Company at Hagerstown, Md. Mr. Hite is foreman in charge of the work. The picture shows the offset at 45 feet where a change in diameter is made, the crown being 125 feet above grade.

F. C. Burtis, '91, has fallen a victim to the postal-card craze and is sending out cards showing the front of his business establishment in Muskogee, I. T. The window signs read "F. C. Burtis Seed Co. Wholesale and retail. Farm and Garden Seeds of all kinds. Poultry Supplies and Feeds." He writes that things are moving very nicely and that the outlook is all right.

Changes of address: Frank A. Hutto, '85, Twin Falls, Idaho; Grant Dewey, '90, 522, East 50th street, Hyde Park, Chicago, Ill.; E. M. Paddleford, '89, Lenexa, Kan., Minnie Deibler, '04, Manhattan, Kan.; Ina M. (Turner) Bruce, '89, 3857a Juniata street, St. Louis, Mo.; Mabel (Selby) Laughlin, '95, Los Angeles, Cal.; Nellie J. Murphy, '85, Sterling, Kan.; H. N. Rhodes, '96, and Wilma (Cross) Rhodes, '04, 1524 Harrison street, Topeka, Kan.

Mary Hall, '04, 222 Brook street, Los Angeles, Cal., has been attending the Normal School the past year and feels much profited by the insight gained concerning the teaching profession. She has had classes in cooking and sewing to teach in this connection. She sees Mary Colliver, '05, occasionally, and Ella Criss, '04, visited with her Fiesta week. The people out there are talking of forming an alumni association and of having a reunion sometime during the meeting of the National Education Association, July 8 to 13. They would be glad to have some members of the Faculty meet with them. There are seven graduates in the city and many more scattered through the country and adjoining towns.

THE INDUSTRIALIST

Vol. 33 **No. 31**

Issued Weekly By

Kansas State Agricultural College

Manhattan, Kansas

Published by

PRINTING DEPARTMENT

J. D. Rickman, Supt.

Entered at post-office, Manhattan, Kan., as second-class matter. Act of July 16, 1894.

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THE INDUSTRIALIST.

VOL. 33. MANHATTAN, KAN., JUNE 1, 1907. No. 31

Kansas Food and Drugs Law, February 14, 1907.

In recent years public interest has been much aroused in respect to the necessity for a close inspection of food and drugs placed on the market, in order to protect consumers from the adulterated, misbranded and injurious articles put out by manufacturers whose acts were determined by greed rather than commercial integrity. Many of the states had enacted state laws concerning this matter, and in some expensive laboratories and diligent inspection service had done much to free them from such inferior goods. Nearly a year ago, after long-continued, persistent effort, a food and drugs law was passed by Congress, which was approved June 30, 1906. This law, from the nature of our national organization, can apply only to goods sold in the territories and the District of Columbia, and to interstate commerce. If properly enforced it will make the burden of the state inspectors very much lighter, as the large houses doing business all over the country will of necessity make their goods to conform to the federal law, and, in so far as state requirements are the same, state inspection will be simplified.

At the last session of the legislature a bill was introduced under the auspices of the State Board of Health designed to protect the Kansas public by supplementing the federal law by a state law. This action of the State Board of Health was due to the energetic initiative of its secretary, Dr. S. J. Crumbine, who for two years has been vigorously applying the limited laws in force that could be brought to bear upon the problem of pure food. With the advice and assistance of the attorney of the board, C. D. Welch, and of Dr. L. E. Sayre, Prof. E. H. S. Bailey, the present writer, and others, a bill was prepared last December for introduction. Consultations were held with representatives of the packing-houses, creameries, confectioneries, and other important interests, in order that the law framed might be reasonable and acceptable to manufacturers as well as a protection to consumers.

The law as passed is based upon the federal law, but deviates from it in certain respects, which deviations are believed to improve it

greatly. It was thought best not to introduce unnecessary variations because of the inconvenience to trade that would be entailed if different systems of labeling were required. The federal law, however, is recognized as weak in many points. The opposition of various classes of manufacturers was such that only a compromise law could get through, and our own law shares to a considerable extent this weakness. As an example, it should be conceded without argument that purchasers are entitled to know the weight, measure, or count, as the case may be, of food stuffs sold in package form; that is, those that are not weighed or measured at the time of purchase. An adequate law should require that the net weight be stated on every package. It was impossible to get this provision incorporated in the national law, the approach to it accomplished being a requirement that if any weight is stated on the package it shall be the true net weight. In deference to the representation of manufacturers the Kansas law was made to harmonize with the federal law in this respect.

One important difference between the Kansas law and the national law is in respect to drugs and medicinal preparations sold under names that have been made official by the United States Pharmacopoeial Convention and used in the Pharmacopoeia of the United States and the National Formulary. The preparations listed in these two works are prepared according to the directions given therein, and strict adherence to these directions is necessary in order that the medicines dispensed by pharmacists may be uniform, so that the physician may rely upon their physiological effect. If the official formulas are followed whenever a given preparation is named it always means the same thing. Thus 1000 cubic centimeters of the fluid extract of sarsaparilla must be prepared by the use of 1000 grams of sarsaparilla in No. 30 powder and a sufficient quantity of alcohol and water used in a definite manner. Whenever one buys fluid extract of sarsaparilla prepared by the official formula he will get a product that should be the same wherever purchased. However, the federal law provides that no drug defined in the United States Pharmacopoeia or National Formulary shall be deemed to be adulterated if the standard of strength, quality or purity be plainly stated upon the bottle, box or other container thereof, although the standard may differ from that determined by the test laid down in the United States Pharmacopoeia or National Formulary. This is a pernicious proviso. Very few consumers know anything about the Pharmacopoeia or Formulary, and they can not be expected to know what difference there is between the official preparation and

one of these which differs from it, even if the formula for the latter is given. The proviso thus opens the way for articles to be sold under the official names, but differing to any extent wished from the official formula. The Kansas law did not incorporate this proviso, and fluid extract of sarsaparilla can legally mean but one thing within her borders, and so with all other official preparations. This is probably the most important single difference between the Kansas law and the national law, although the other points of difference are collectively of considerable importance.

A law dealing with so complex a matter as foods, and designed to regulate business as intricate as that of the present, must necessarily be very difficult to frame so as to have it cover the desired ground exactly. To assist in an understanding of the United States food and drugs law the Secretary of the Treasury, the Secretary of Agriculture and the Secretary of Commerce and Labor were charged with the duty of making uniform rules and regulations for carrying out the provisions of the act, including the collection and examination of specimens of foods and drugs. This duty was delegated to a commission which prepared a series of rules and regulations considerably greater in length than the law. These rules and regulations are perhaps subject to contest, should any touched by them choose to invoke the action of the courts. They are, however, designed merely to explain and amplify the law, stating the interpretations that the secretaries named will put upon it in any action looking to its enforcement.

The Kansas law provides that the State Board of Health is authorized and directed to make public uniform rules and regulations not in conflict with the law, and which, so far as they are applicable, shall be those adopted and promulgated by the United States Department of Agriculture. Violation of these rules and regulations is punishable by a fine not exceeding fifty dollars, or six months imprisonment in the county jail, or both. These rules and regulations are necessarily similar to those adopted in reference to the national law, but are believed to be better in a number of respects. One of these is the requirement that when a preservative is used in a food the name and quantity of the preservative shall be plainly stated on the label. The national law merely provides that only harmless preservatives may be used, but as the question of the effect of the different preservatives is a matter that is still largely in doubt, it is certainly much more satisfactory to have the presence of the preservative declared, even if it is innocuous.

The Kansas regulations have also included certain features re-

lating to sanitation that are believed to add greatly to their value. The last legislature having prohibited the sale of poultry or game that has been preserved by refrigeration or cold storage unless the entrails, crops and other offensive parts are properly drawn and removed, the regulations supplement this by prohibiting the serving for food in any restaurant, hotel or dining-car in Kansas of any poultry, game or fish that has been so preserved.

All places where drugs or food products are manufactured, prepared, stored or sold must be kept in a wholesome and sanitary condition. Sidewalk displays of perishable products are prohibited unless such products are enclosed in a show-case or otherwise protected from flies, dust, or other contamination. Food products that must be peeled, pared or cooked before consumption may be uncovered, provided the bottom of the container is at least eighteen inches above the sidewalk.

It is evident that there is but little advantage to the consumer in having a wholesale package correctly labeled if the materials served the customer are removed from the original package and displayed in show-cases or otherwise without a label. The Kansas regulations provide that food products taken from the original package and exposed for sale shall be accompanied by a copy of the label of the original package conspicuously displayed. This regulation finds frequent application in the case of confectionery, one of the most glaringly adulterated of food products. Every purchaser of such goods is entitled to see the label on the original package, or a copy of it, and such should be displayed without any demand on the part of the customer. The regulations also require the preservation of labels in the original state.

A further very important matter in connection with the interpretation and enforcement of any food law is proper standards for judgment. What is adulterated food? The law defines it to a certain extent, and additional provision is made in that the Secretary of Agriculture has been authorized to establish and promulgate food standards and to determine what are regarded as adulterations therein. He is authorized to consult with the committee on food standards of the Association of Official Agricultural Chemists and other experts in determining those standards. He availed himself of the advice of those experts and of the trade interests touching the products for which standards have been determined, and has established standards for a large number of food products. These standards are stated in the form of definitions which include, where necessary, statement of the chemical composition. By the Kansas law the standards of quality, purity,

and strength, for food, liquors, drugs and drinks that have been or shall be adopted by the United States Department of Agriculture, are declared to be the standards in the State of Kansas unless other standards are prescribed by the State Board of Health. This provision harmonizes the state and federal standards unless it should become clearly necessary to have different ones.

Notwithstanding the labor that has been put upon the law, rules and regulations, and food standards, there are many points where there is room for honest doubt concerning the meaning of the law. From time to time, therefore, food inspection decisions are made by the Secretary of Agriculture. The first thirty-nine were made before the passage of the law of June 30, 1906, and refer to laws touching the importation and exportation of foods. The decisions since then, which have now reached to No. 68, apply chiefly to the new law, and a perusal of them will convince one of the difficulty of the problem of food and drink, and especially of knowing what one eats and drinks. Similarly Secretary Crumbine, chief food and drug inspector of this State, is finding it necessary to make decisions concerning the scope and application of the Kansas law. Naturally in any points in which the national and State laws are identical, it will probably be his policy to follow the national interpretation, but doubtless numerous delicate points will arise that have not been touched in national decisions, or which are peculiar to our own law.

In answering the manifold questions that may arise in the minds of individuals concerning the scope and application of the pure-food laws, nothing of greater assistance can be formulated than a general statement of the purposes of the laws, and the individual provisions can be accurately interpreted in the light of the generalizing statement. The purposes of both the United States and the Kansas laws are, first, to prevent the sale of deleterious or unwholesome food products; second, to prevent deception of the purchaser. Most of the provisions of the law grow out of the second object. There are two general classes of deceptions that are especially recognized in the laws—adulterations and misbrandings. An adulteration may not only be a deception, but it may also be the use of a deleterious substance. The laws define adulteration and misbranding under several headings, which are especially for use in interpreting them and which in some cases may seem to be in conflict with the ordinary use of these words.

Adulteration may be (1) by the addition of anything that reduces or injures the quality or strength of a food or drug, such as

the addition of water to milk or cream, and the incorporation of excessive amounts in ice-cream or butter; using mineral substances in confectionery; mixing ground cocoanut shells with pepper, or exhausted spices with the genuine. (2) By substitution of any substance wholly or in part for the food product. Glucose for cane sugar, cane sugar for maple sugar, other flour for buckwheat flour, other fats for butter fat, extract of Tonka bean for vanilla, methyl alcohol for ethyl alcohol, peanut or cotton-seed-oil for olive-oil, lard for butter fat in cheese, apple pulp for other fruit, and pumpkin for tomatoes, are examples of this kind of adulteration. (3) By abstraction of any valuable constituent. Skimmed milk for whole milk, cheese from skimmed milk instead of from whole milk, cloves and ginger from which the essential constituents have been partially removed, are prevalent adulterations of this kind. (4) Mixing, coloring, powdering, coating or staining in a manner whereby damage or inferiority is concealed. Many housewives have noticed the production of a bluish scum after dissolving sugar in certain culinary operations. This was due to ultramarine, a blue pigment, added to the sugar to offset a slight yellowish tint due to imperfect refining. Canned and preserved fruits and vegetables, ketchup, pickles, etc., have frequently been colored in order to make them more attractive, and this has been carried to such an extent as to pass far beyond the natural colors of the food. Sugar has been added to field corn in an attempt to imitate sweet corn. All these practices are examples. (5) Addition of any poisonous or deleterious ingredient except an external preservative necessarily removed before use, and accompanied by directions for its removal. This heading includes added colors and any preservatives of an injurious nature. (6) Decomposition, putrefaction, taint, or filthiness. The presence of these conditions determines the classification of a food product as adulterated, although the word is not ordinarily used in that way. The presence of the germs of contagious diseases would "taint" the food. A food wholesome to begin with may become adulterated in unsanitary surroundings.

Misbranding may occur in many ways, some of which may be stated as follows: The article is misbranded if the label is an imitation of another food or sold under its name; if it is deceptive in any way; if it represents the article as of foreign origin when it is not; if all or part of the contents of a package have been replaced by other goods; if a statement of weight or measure is made and the same is not the net weight or measure, etc.

An important point subject to much misunderstanding is this:

Many of the adulterations enumerated are not forbidden, but if the adulteration has been practiced, the label must so state. It is not illegal to sell skimmed milk, filled cheese, mixtures of cane sugar and maple sugar, mixed flour, etc., provided that the label truthfully declares the nature of the article. The statement "guaranteed under the Food and Drugs Act, June 30, 1906," hence, does not in itself speak for the purity of the article sold. It only means that the manufacturer guarantees it to be as represented, and the purchaser must read the label to see what the article is guaranteed to be.

Goods are often delivered to purchasers unlabeled. They may be ordered by telephone and the desired portion delivered to the customer. Such unlabeled goods must correspond with the order given, and if they do not the law has been violated. This applies to weight as well as to other qualities. If one orders a pound of butter he is entitled to receive a pound of butter, not fourteen ounces of butter and three ounces of wrapping.

The pure-food laws, while demanded primarily by consumers and enacted in their behalf, are equally necessary to honest manufacturers and dealers. They enable them to do business successfully by eliminating the competition of dishonest, short-weight, unwholesome, adulterated goods. The enactment of these laws is only one phase of the general trend of business toward honesty and genuine goods, satisfaction or your money back, instead of deception and fraud, get all you can out of the customer this time lest you never have another chance. J. T. WILLARD.

"Village" and "Town" in Names of Cities.

The word city is used in town names very extensively. Scan a few instances taken from Kansas geography: Kansas City, Junction City, Cawker City, White City, Osage City, Bluff City, etc. In each case city is written as a separate word and capitalized. A different plan is shown in German nomenclature, for instance, where we find such forms as Darmstadt, Karlstadt, Ingolstadt, Neustadt, etc. So we have in Swedish Karlstad, Halnstad, etc., and in Norwegian Skjerstad, etc. City has come to us, through French as a medium, from Latin *civitatem*, state. Rome was such a city-state, and the three free cities of Germany are a modern instance of the same.

The Greek *polis*, city, with the original meaning "fortified place of refuge," occurs frequently as a suffix. So we have such city names as Minneapolis, City of Minnehaha; Kanopolis, Centropolis, Indianapolis, and the like. The suffix *-polis*, city, is met with in va-

rious other forms, too. Thus we find Russian Nikopol, Simferopol, Sevastopol, Olgopol; Hungarian Tarnopol; Turkish Adrianople, City of Hadrian; Constantinople, City of Constantine; Gallipoli (Italy, Turkey), etc.

Our native word town has several forms and wide application, and has many corresponding forms in other languages. Unlike city it has become an integral part of the city name. So we have such forms as Walkertown, Williamstown, Jamestown, Yorktown, Marshalltown, and Queenstown. The Old English form of the word was *tūn*. Town is the regular independent development from this form, and city and town names ending in -town are all of later formation. But *tūn* used as a suffix regularly became -ton. Many new names were then formed by analogy from the original words in -ton. So we have a multitude of forms such as Broughton, Shipton, Mapleton, Pleasanton, Princeton, Arlington, and the like. Old English *tūn* is cognate with Old High German *zūn*, New High German *Zaun*, hedge. The Teutonic *tūn* was therefore a place surrounded by a hedge, fence, or wall. German has few or no town names containing this suffix. The corresponding Old Celtic form was *dūnum*. The *dūnum* was originally a fortified place, later a settlement, a town. Though in England the Celts were driven to the North and West by the Anglo-Saxons, they left traces in the names of cities and towns in the conquered provinces, as did the Romans later. We find Celtic dun preserved in Wimbledon, Hendon, Abingdon, Craydon, and London.

Our words yard, garden, and horti-culture are cognates of Russian gorod, city, South Slavic grad, castle, tower. There occur many names such as Russian Ivangorod, compare Johnstown; Mirgorod, Tamasgrad (Thomas-), Pavlograd (Paul-), Elizabethgrad, Bulgarian Rasgrad, and Servian Belgrad, Bielgorod White City. A corresponding city name is found in South German Stuttgart, though German *Garten* has the meaning garden.

A by-law is in origin a town law. By, Danish for town, is found in town names in the north of England especially. Thus we have Derby, literally "dwelling of wild animals," Appleby, Whitby (White City), Ashby, Willoughby, Coningsby, Normanby, also for Scotland forms like Middlebie, Lockerbie, etc.

A borough was a place of refuge, a fortified town. We have the word in a variety of forms used as a suffix in city names. The Old English *burh*, *burg* is retained in names such as Pittsburg, Harrisburg, Galesburg, Vicksburg, etc. Other countries show similar forms. We have in Sweden, for example, Göteborg (Gothenburg); Helsingborg; in Denmark, Silkeborg, Aalborg, Viborg;

in Germany, Burg, Würzburg, Magdeburg, Hamburg; in Holland, Burg, Kuilenburg, Doesburgh; in Spain, the borrowed, adapted form Burgos. In North England the typical development of a dark vowel in an r-and-consonant group gave us in this case -borough. So there occur names like Peterborough, Bamborough. Later, as a result of "reformed spelling," boro and boro' became the printed form of Old English *burh* in many instances; hence Edinboro, Owensboro, Peterboro, Hillsboro, etc. A few old forms like Jedburgh, Edinburgh, Helenaburgh still are found in Scotland. Yet another development, the dropping of the original vowel, is seen in the name Middlesbrough. Another variant is offered in Atterbury, from Old English *Aet thaere byrig*, "at the city," etc., where the dative form, Old English byrig, is developed. A multitude of names arise from this source, as witness Bury St. Edmunds; Canterbury, from Cantwaraburh, "the city of the inhabitants of Kent;" Roxbury, Amesbury, Tewksbury, and Waterbury, the last of which has become a "household word."

The root of the term hamlet, small village, is identical with our word home. The Old English form *hām* is found in many town names, as Birmingham, Nottingham, Waltham, East Ham, etc. German displays a multitude of corresponding forms in -heim, as Mannheim, Germersheim, and Pforzheim, and English Blenheim is an adaptation of German Blindheim. Corresponding forms are seen in Dutch Arnhem, Zelhem, Waereghem, etc., and in Norse Trondhjem.

Where the Roman legions went, there went the traders. Small wonder then that we find Latin *castra*, camp, in so many town names centuries before the Norman conquest. The development of Old English *ceaster*, from *castra*, has been diverse. Thus we find Brancaster, Doncaster, Lancaster, etc.; also Chester, Winchester, Manchester, etc.; likewise the form cester in Gloucester, Worcester, Cirencester, etc. This suffix is well disguised in Exeter, from Old English Exanceaster.

The suffix *-wick* has widely distributed correspondences in other languages. For example, Latin *vicus*, Gothic *weihs*, Old Church Slavonic *visi*, Celtic (Cornwall) *gwic*, and Albanian *vise*, with the general meaning "village, settlement of a clan." The form *-wick* occurs in Scotch Wick, Kerwick, Hawick, etc.; in English Warwick, Sedgwick, Chiswick, and the like, and a corresponding form is seen in Dutch Winterswijk. In South England the form is normally *-wich*, as in Woolwich, Greenwich, Harwich, Norwich, etc. In these last instances, as is so often the case, the printed form limps along behind the spoken form; the suffix is pronounced -ich (-itch).

While the word *ville* is one of the very latest suffixes employed in the formation of town names it is also very prolific. Almost every county boasts of at least one -ville. The word was borrowed, apparently after the Norman conquest, from Old French *ville*, which is Latin *villa*, doubtless originally **vicla*, "a small village." Compare *-wick*. A few of the multitude of Kansas -villes, are Marysville, Leonardville, Coffeyville, Waterville, etc. This suffix is added at pleasure to surnames, topographical features, and the like.

In *-thorp*, the original meaning corresponded to the usual present meaning of German Dorf, "a small settlement of farmers in the midst of the lands farmed by them." The term is an old one and is found in Celtic as well as in the various Germanic dialects. In England the form is not very common. We see there, however: Saxthorpe, Ullesthorpe, Thorp le Soken, etc. In Germany *-dorf* is found pretty widely distributed. It occurs, for instance, in Düsseldorf, Mühldorf, Altdorf, and many similar names. The surname Winthrop exhibits -thorp(e) with metathesis of *-or-*.

It has not been the purpose in the above paper to present an exhaustive treatment of the subject discussed. Rather the aim has been to suggest some points to the general reader and to invite further inquiry on the line of origin and significance of place names.

JOHN V. CORTELYOU.

K. S. A. C. Weather Report for May, 1907.

Several new weather records were made by the month just closed. and May, 1907, thus assumes some importance when its weather is compared with that of other Mays of the past 49 years, as shown by the College records.

Only 1.05 inches of rain fell during the month, which is the least amount for this month recorded here.

The temperature on the 27th fell to 30°, which is the lowest temperature recorded for that late a date. Also the temperature on the night of the 15th, 29°, has been equaled only once, on May 1, 1875. The mean monthly temperature was 59.4°, which was 5.60° below normal. The mean maximum temperature for the month was 71.7°. The mean minimum temperature was 47.1°. The highest temperature for the month was 92°, on the 23d; the lowest was 29°, on the 15th.

There were 14 clear, 8 partly clear, and 9 cloudy days. Rain in measurable quantities fell on six days. the total amount being 1.05 inches. On the 3d of the month, 1.5 inches of snow fell. The greatest rainfall in 24 hours, .49 inches, was on the 30th.

The average wind direction was west, the run of wind for the month being 7636 miles. The greatest run for 24 hours was 681 miles, on the 12th. The greatest hourly run, 35 miles, between 9 and 10 A. M. on the 12th.

The maximum barometer for the month was 29.25 inches, on the 27th. The minimum was 28.35, on the 13th. The mean barometer hight for the month was 28.85 inches.

The rain of the 30th, while insufficient, will do much to maintain crops until other rains follow.

Commencement Week, 1907

Sunday, June 16

Baccalaureate Sermon, College Auditorium, 4 p. m., Rev. S. S. Estey, D. D., Pastor First Presbyterian Church, Topeka, Kansas.

Monday, June 17

Recital by Music Department, College Auditorium, 8 p. m.

Tuesday, June 18

Examinations from 8:35 a.m. to 2:40 p.m.
Senior Play to Invited Guests, College Auditorium, 8 p.m.

Wednesday, June 19

Examinations from 8:35 a.m. to 11:50 a.m.
Business Meeting Alumni Association, 4:30 p.m.
Informal Reception to Alumni, Women's Gymnasium, 8 p.m.

Thursday, June 20

Annual Address, College Auditorium, 10 a.m., Prof. John Hamilton, Farmers' Institute Specialist, Department of Agriculture, Washington, D. C.
Presentation of Diplomas
Cadet Band Concert, College Auditorium, 2 p.m.
Military Drill, 3 p.m.
President's Reception to Regents, Faculty, and Invited Guests, East Parkgate, 8 p.m.

THE INDUSTRIALIST

Published weekly during the College year by the Printing Department of the

Kansas State Agricultural College

Manhattan, Kansas.

PRES. E. R. NICHOLS.....Editor-in-Chief
PROF. J. D. WALTERS.....Local Editor
PROF. J. T. WILLARD.....Alumni Editor

Local Notes.

During the absence of Director Burkett, Professor Willard is acting director of the Experiment Station.

Assistant W. H. Andrews delivered the annual address at the Riley county district school commencement at Randolph, May 31.

In a rather dopey game last Saturday, in the Manhattan athletic field, the Agricultural College defeated Lindsborg College by a score of 6 to 1.

Assistant Theo. Scheffer is making preparations for building a very neat and artistic cottage on Faculty Row. The drawings were made in St. Louis.

Asst. C. O. Swanson, of the Chemistry Department of the College Experiment Station, is building a residence at the corner of Eighth and Bluemont Avenue.

Institute Supt. J. H. Miller left Monday morning to meet an agricultural exhibit car from Louisiana, touring the counties of Northwest Kansas. He remained with the car several days, touching at Colby and Norton, and returned to College Wednesday.

"Liberty Corners," as presented at the Auditorium, May 24, by the Alpha Beta Literary Society, was a high grade play. The cast was well chosen and the parts were well acted. The Alpha Betas never give a mediocre entertainment, and the large attendance voted "Liberty Corners" as one of their very best.

The annual spring election of the Students' Coöperative Association resulted as follows: J. E. Martin, president; O. W. Weaver, manager of bookstore; Fred M. Hayes, manager of dining-hall; W. K. Gardner, secretary; G. H. Brown, K. B. Cecil, A. G. Kittell, members board of directors.—*Students' Herald.*

The "Farmers" walked away with Fairmount College in a slow game at the Manhattan Athletic Park, Saturday afternoon, May 18. The game stood 10 to 1 in favor of our boys. Either the Fairmount team had been vastly overrated or they had a bad case of strabismus. We knew that they could not beat our boys, but all expected an evener score.

Manhattan is growing and improving. Nearly two miles of cement curbing and over five miles of brick and cement walks will be laid during the present year. Twenty-two residences, several of them costing over four thousand dollars, exclusive of ground, have been or will be completed during the first six months, and a much larger number will be finished before December. The sound of the carpenter's hammer is heard in every block.

The society lecture-course committee for next year consists of the following students: Hamilton, A. G. Kittell; Webster, S. W. Cunningham; Ionian, Ella V. Brooks; Eurodelphian, Marie Coons; Franklin, Elmer Bull; Alpha Beta, D. E. Lewis; Athenian, Orville Kiser.

The *Farmers' Advocate* and the *Kansas Farmer* publish pictures of a "milking" at the College dairy barn. The picture shows the milking machine in operation in the corral near the barn, driven by a tread-mill that is operated by two young bulls. The whole family of milkers, bulls as well as cows, seem to enjoy the exercise very much.

The next year's Kansas Intercollegiate track meet will be held at Emporia, on the State Normal athletic field, some time in May. The officers of the association elected for the coming year are as follows: Walter James, Fairmount, president; Prof. D. C. Schaffner, College of Emporia, vice-president; Prof. H. Z. Wilbur, K. S. N., secretary-treasurer, and Geo. A. Dean, K. S. A. C., and J. J. Lytton, Washburn, members of the executive committee.

Captain Shaffer has been requested by the Bureau of Insular Affairs, Washington, D. C., to nominate a graduate of this College for examination for third lieutenant in the Philippine Constabulary, at a salary of $1100 per year and allowances. No mental examination is required of college graduates. Physical examination can be taken in Manhattan, or before any pension examiner, and conforms to that of applicants for the United States Army. Any member of the class of '07 or recent graduate who desires such appointment may secure additional information by consulting Captain Shaffer.

Victories in the athletic field do not necessarily indicate that an educational institution is doing high-grade work in the class room and laboratory. Nevertheless it is true that a small college or a weak institution has not the student body from which to select men that will make a strong team. The Agricultural College has never made special efforts to attract players, yet as the institution grew its athletic teams have become stronger also and the time has come when we can easily claim the championship of the State. The University team has defeated Baker and St. Marys, and our team has defeated the University team in two games this spring.

The concentrated feeding stuffs law passed by the legislature last winter goes into effect the first of July, and many of the millers of the State are showing a commendable promptness in complying with its provisions. The Experiment Station mail is burdened at present by inquiries concerning the scope and application of the law, and the Chemical Department is likely to be overwhelmed by the large number of analyses required of it. All feeds sold in the State must bear a label showing, among other data, the percentages of fat and of protein in them, and it is the duty of the Chemical Department to make the analyses necessary in this connection.

Mrs. Mayo and her daughters, Marguerite and Dorothy, have been visiting friends in Manhattan and Junction City recently. They left Tuesday for Michigan, where Doctor Mayo will meet them. The doctor had hoped to visit us, but pressure of duties has prevented it. They are all looking forward with interest to taking up residence in Montevideo, Uruguay, where Doctor Mayo has an important position with the government. Their many friends here unite in wishing them a prosperous sojourn and a safe return to the only country that can be home to them.

Prof. C. K. McClelland, M. Sc., the newly elected superintendent of the Fort Hays Branch Experiment Station, visited College last week on the way to his new field. Professor McClelland was graduated from Ohio State University in 1898, and then became assistant in agronomy at North Carolina Agricultural College. Later he took the master's degree at Cornell, and from there until the present time has been connected with the Bureau of Plant Industry, Washington, D. C. The professor comes to us highly recommended. He will undoubtedly make the Branch Experiment Station a success, though it may take him some time to learn of all the capabilities and the many pranks of the Kansas prairie climate.

Alumni and Former Students.

Born, to Emilie (Pfuetze) Samuel, '98, and Will Samuel, former student, May 16, a daughter.

Born, to W. J. Rhoades, '97, and Edith (Huntress) Rhoades, '01, of Olathe, Kan., a daughter, on May 26.

Changes of address: Clara Pancake, '03, 228 South 4th street, Philadelphia, Pa.; J. W. Fields, '03, 949 Minnesota Avenue, Kansas City, Kan.

Retta Womer, '04, will be graduated from the Pharmacy School of the University of Kansas on the 5th instant. She has not decided just where to locate, but will visit at home for a time.

Alice Loomis, '04, renewed her acquaintance with the College and numerous friends this week. She is very enthusiastic over her work at the Nebraska Normal School, at Peru, and seems to have fared well in the performance of her duties.

Agnes (Fairchild) Kirshner, former student, with her children, will leave Kansas City about June 1 for Crystal Lake, Mich. (Frankfort P. O.), where they will spend the summer. They will occupy the beautiful cottage belonging to Ella (Gale) Kedzie, '76. Mr. Kirshner will probably join them for a part of the time.

Married, May 22, 1907, at the home of the bride's parents, Mr. and Mrs. R. B. Felton, near McPherson, Miss Edith L. Felton and Mr. James Fields. Mr. and Mrs. Fields left soon after the wedding for Kansas City, Kan., where Mr. Fields will open an office, having recently graduated from the Kansas City Dental College. Mr. and Mrs. Fields are well known here in College circles.—*Nationalist.*

Dairy and Poultry Number

THE INDUSTRIALIST

Vol. 33 No. 32

Issued Weekly By

Kansas State Agricultural College

Manhattan, Kansas

Published by

PRINTING DEPARTMENT

J. D. Rickman, Supt.

Entered at post-office, Manhattan, Kan., as second-class matter. Act of July 16, 1894.

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THE INDUSTRIALIST.

VOL. 33. MANHATTAN, KAN., JUNE 8, 1907. No. 32

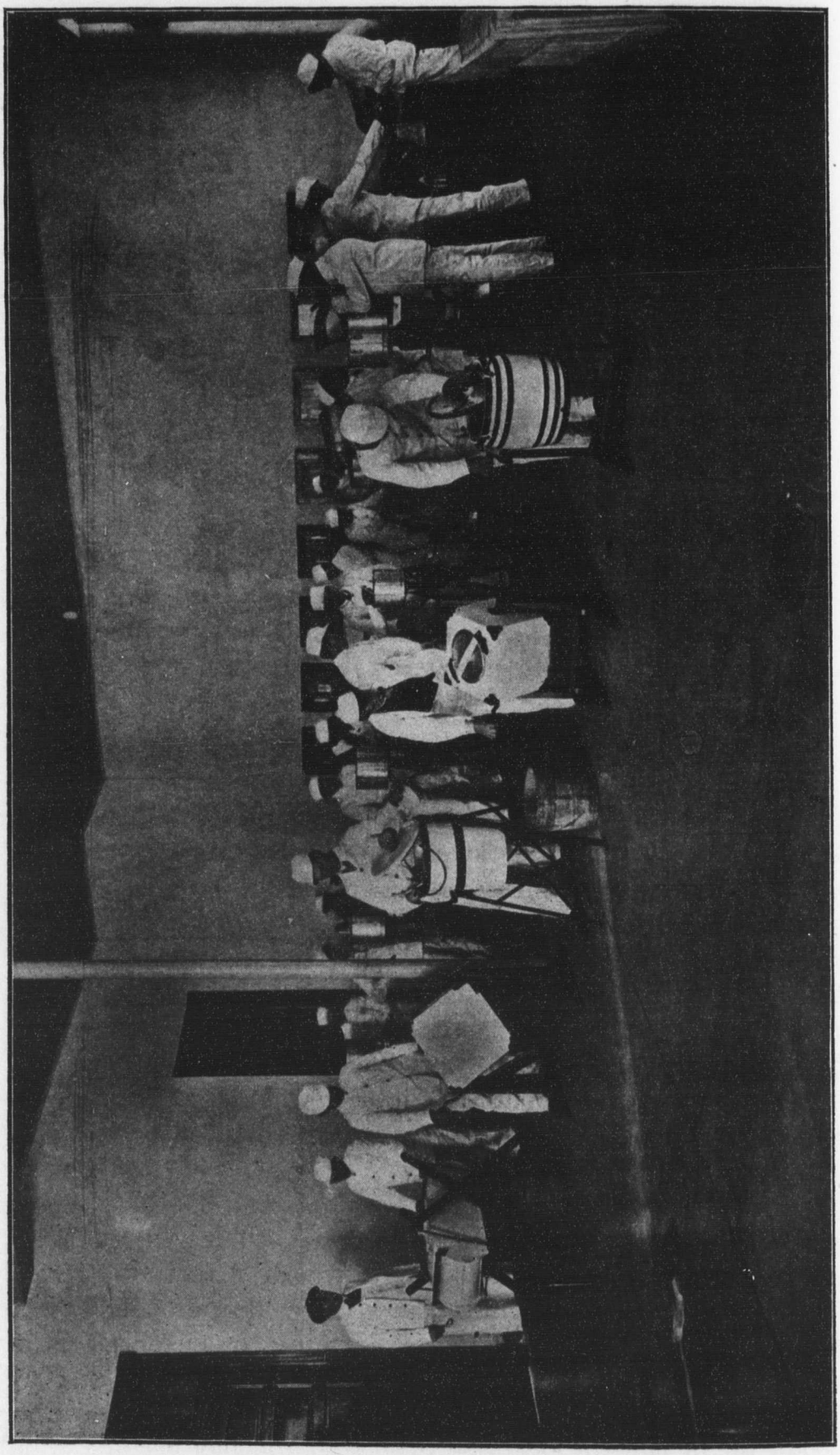
Dairy and Poultry Work at Kansas State Agricultural College.

Dairy and poultry farming are considered intensive lines of agriculture. Owing to the fact that these two classes of farming are, as a rule, combined, from a producing standpoint, and also the fact that the products are generally marketed together and handled under similar market conditions, it becomes very proper to class these two lines together. Both of them play a very important part in Kansas agriculture, and gradually as the population increases and as the soil becomes less fertile the more necessary these two lines of farming will become.

DAIRYING.

The wealth of Kansas lies in her soil, and in order to maintain the prosperous condition of the past it is necessary to maintain the fertility of the soil. The prosperity of a community depends largely if not wholly upon the amount of fertility in the soil. It is therefore essential to introduce a system of farming that will maintain these prosperous conditions. We know well that by growing crops the fertility of the soil is removed according to the quantity and the kinds of crops raised. For illustration, the most important crop of Kansas is wheat. We understand from practical experience, as well as from chemical determinations, that a ton of wheat removes about $8.35 worth of fertility from the soil. In the same way $6.50 worth of fertility is removed by growing a ton of corn.

And so we follow the category of the different systems of farming until we reach the practice of dairying, where we find that it requires the removal of but 36 cents worth of fertility from the soil to produce $500 worth of butter at 25 cents per pound, which proves the value of this system of farming to conserve fertility. In the eastern states there are good illustrations of this fact. We find that the extensive systems of grain farming have been carried on in certain localities until the land has become worthless and farms have been abandoned. It is found that those



Students operating hand churns and cream separators.

farms upon which dairying has been carried on have remained rich in soil fertility. Abondoned farms are now being taken up and the system of dairy farming is practiced upon them. Large quantities of feeds are bought and consumed by the cows and the manure is then transferred to the soil and the fertility is again restored.

It is quite essential that the farmer of Kansas should begin to realize the importance of the dairy business from the standpoint of preserving soil fertility and to avoid the extreme waste that comes about by extensive crop raising. For this reason, largely, dairying has become an adjunct to every class of crop raising and horticultural work in eastern countries.

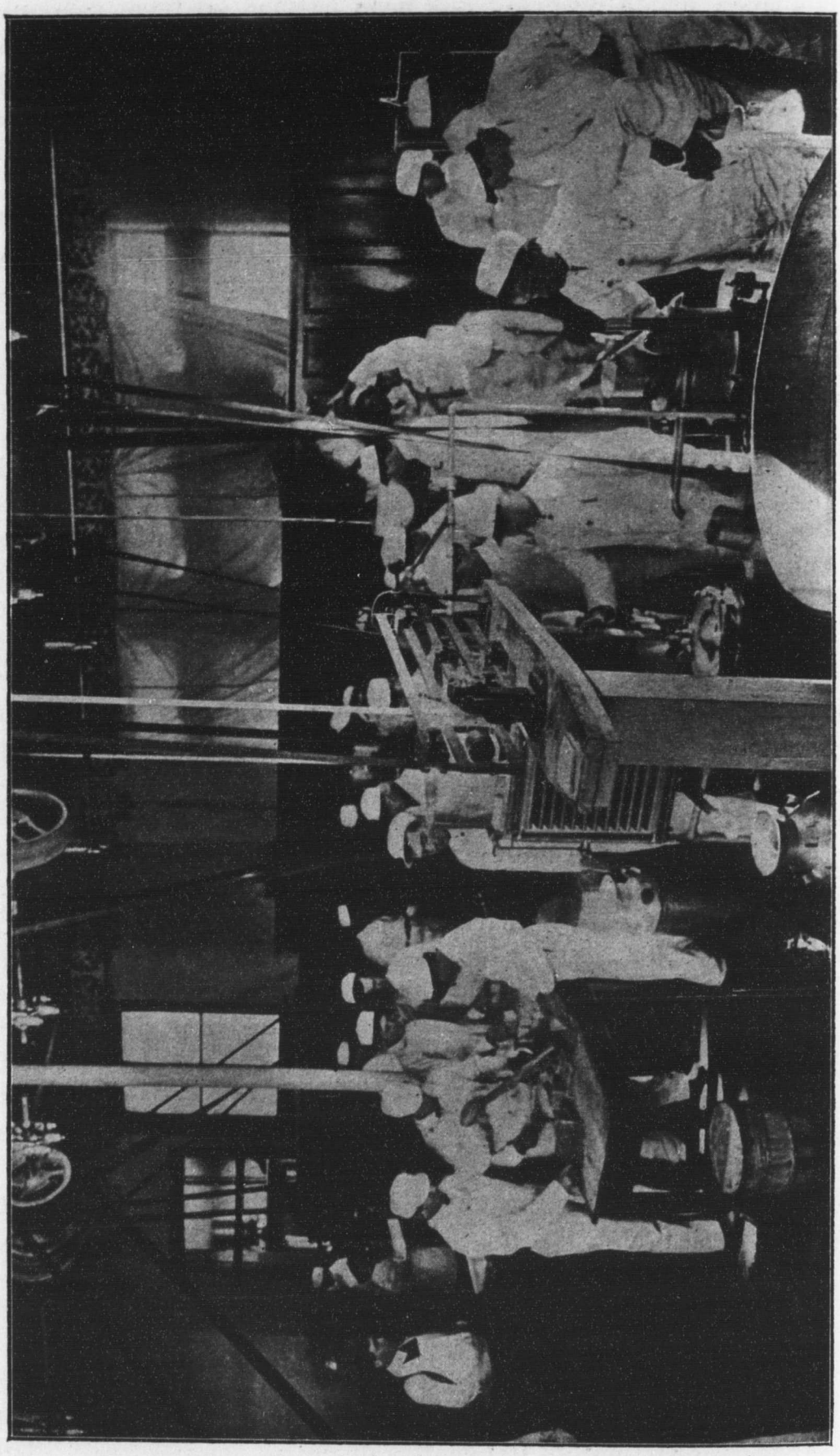
Dairying, however, also plays a very important part in other classes of farming, such as poultry raising and swine raising. It is being realized that the best egg-laying feeds for hens are milk feeds, and furthermore it is found that the most economical and best feed for swine is milk. Hence, dairying cannot only be considered as a profitable independent business, but it becomes one of the most valuable adjuncts to practically all of the important systems of farming. Kansas is fortunately situated to make dairying profitable, because alfalfa and corn, the two best milk-producing feeds known, can be grown abundantly within its borders at a small cost. The farmers are furthermore fortunately situated because they can readily reach the Missouri river markets, which are fast becoming the best markets of the United States, as well as those of other western states where dairy products now command, and always will, the highest market price.

Kansas has to day within her borders 711,152 milch cows, which produce annually 71,115,200 pounds of butter, which for the past year has been worth $17,778,800. They have produced skim-milk which is worth approximately $4,600,000. The calves at time of birth are worth $1,422,000. Dairying has, therefore, an aggregate value of $23,800,800. This is not figuring the value of the $10,000,000 worth of hay that these cows have consumed on the farm, for which they have returned an equivalent of $8,800,000 worth of fertility.

Gradually as the years pass on dairying will be steadily on the increase. The new year of 1907 shows an approximate increase of twenty per cent over the same time last year.

NEED OF INSTRUCTION IN DAIRYING.

According to statistics we find that the average cow of Kansas produces approximately 100 pounds of butter fat per year. This is far from the average attained in some of our eastern states,



Students making butter in the College Creamery.

where dairying has been practiced for a longer period of time. It is indeed a small capacity for a cow when we realize that there are many good herds which average from 300 to 400 pounds of butter fat per cow per year.

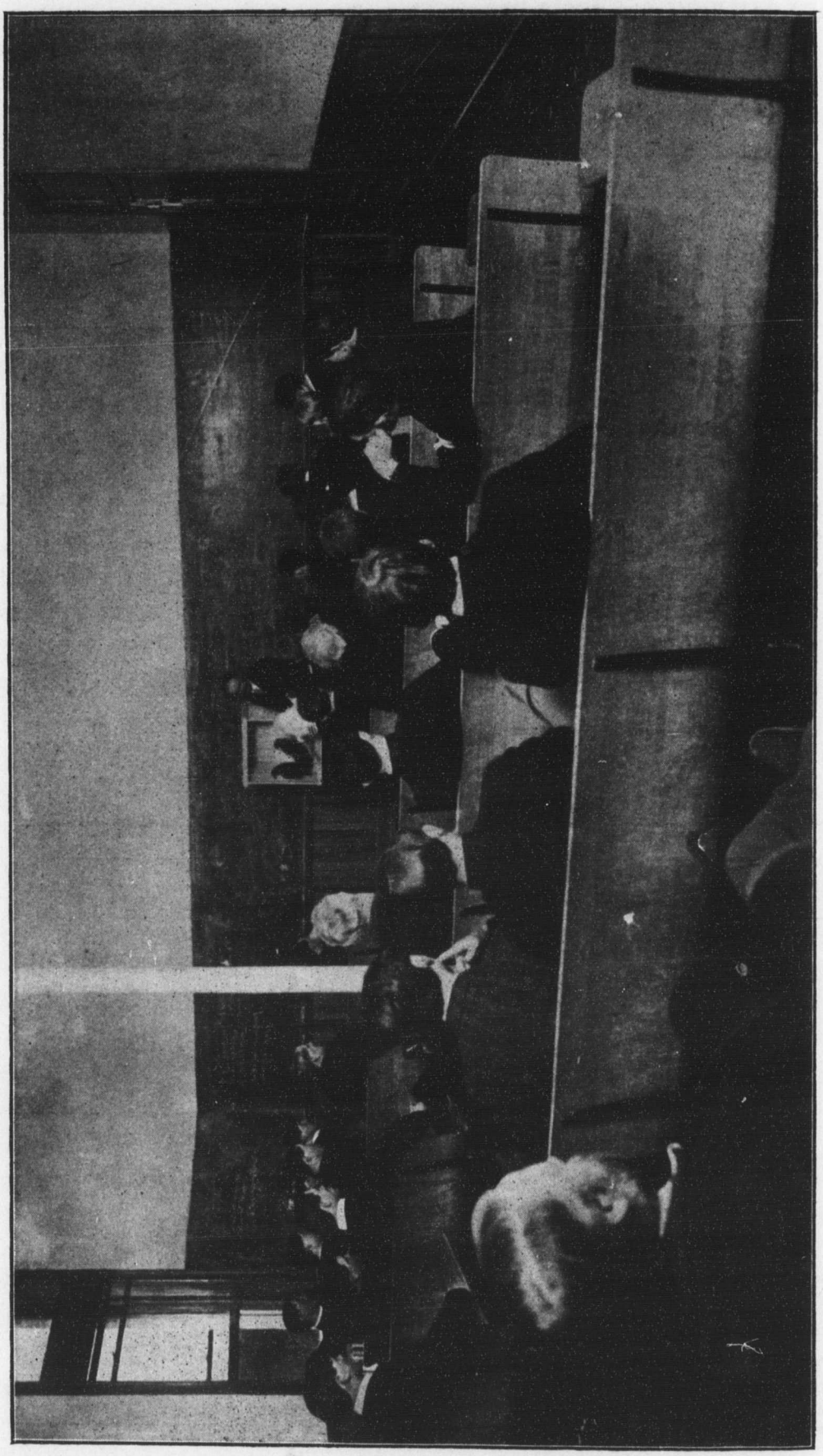
There is a great opportunity for increasing the capacity of cows of this State when we have such records placed before us as that made by Yeksa Sunbeam, the famous Guernsey cow, which in 365 consecutive days produced nearly 1000 pounds of standard commercial butter, and Colantha, the famous Holstein Fresian cow, which made the marvelous record of producing 5.13 pounds of butter in one day. It seems, therefore, very essential that instructions are necessary in selecting and breeding dairy cows and to improve the methods of feeding and general care, in order to develop animals of greater milk-producing capacity. It is also necessary that instructions be given in the manufacturing of dairy products for the market in order that Kansas products may stand higher in merit. An improvement which would mean two cents increase in the price of dairy products in Kansas would add annually $1,500,000 to the wealth of the State.

WHAT IS OFFERED AT THE KANSAS STATE AGRICULTURAL COLLEGE.

The Kansas State Agricultural College offers three courses in dairying. One in connection with the regular course, one dairy short course, especially adapted to students who wish to engage in the manufacturing side of dairying, and one dairy farmers' short course, adapted to those especially interested in the production of dairy products.

In the regular course four terms of dairying are given, one term being devoted to the elementary work, while three terms are devoted to advanced work in different specialties. In the first term instruction is given in the breeding, feeding, rearing and judging of dairy cattle and the general management of dairy herds. The principles of breeding are taught as related to the raising of animals so as to enable the student to know how our breeds of live stock have been developed and how animals of superior merit may not only be perpetuated, but improved. Instruction is also given as to the value of different feeds, so that the student may combine feeds to get the required nutrients, and also to combine them in the most economical manner to produce the desired quantity and quality of products.

Instruction is given in operating the milking machines, cream separators, farm, steam- and gasoline-engines, churns, butter workers—in fact all dairy appliances. Students are taught the conditions influencing the quantity and quality of milk, its secre-



Lecture on poultry judging at the Kansas State Agricultural College.

tion, nature, and composition, and the methods of handling it, both for butter and cheese making. Especial attention is given to the practice of testing, and also in the detection of adulteration of milk and all its products. Practice with separating and pasteurizing milk and cream, the ripening of cream, churning, working, packing and marketing of butter. In cheese making special practice is given in the setting of milk, cutting of curds, salting, pressing, and the curing as well as in the marketing of the same.

In the three terms of advanced study, special attention is given to the rearing of dairy calves, to the feeding, recording and testing of dairy cows for the advanced registries, and also in the production of sanitary milk for city trade.

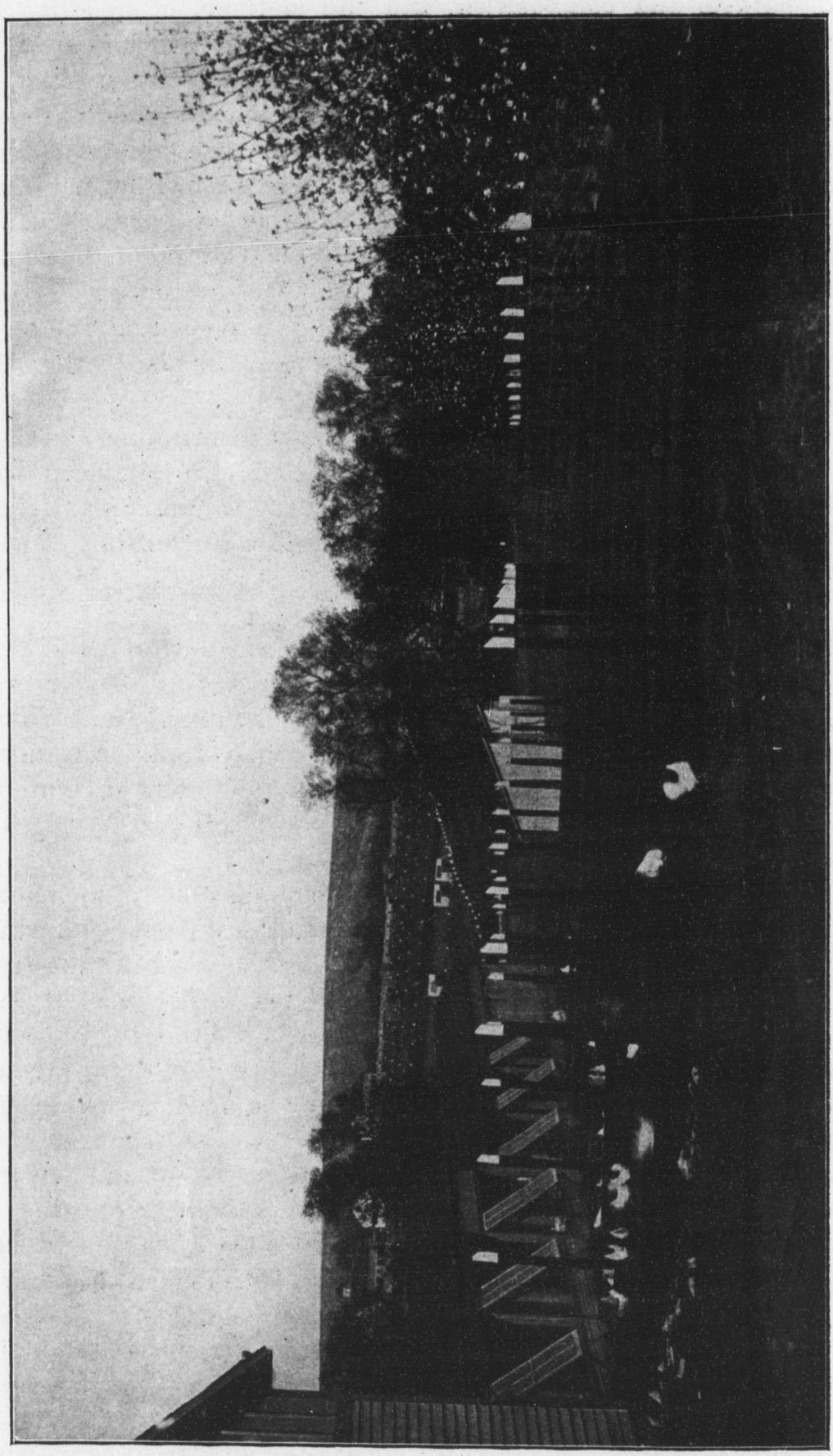
In the winter term special work is given in planning and constructing ice houses and refrigerating plants for artificial and natural ice conditions. Work is given in planning creameries, cheese factories, ice-cream factories, and milk condensing plants, and in the manufacturing of condensed milk as well as in manufacturing ice-cream.

In the spring term instruction in advanced butter making is given. Special stress is laid on the manufacturing of starters, which is the most important factor in butter making, and which produces the good flavor which is always desired. Advanced work in cheese making is offered in the manufacturing of common and fancy cheese, such as the "Cottage," "Club House," "Brick" and "Swiss."

The short course in dairying, which includes chiefly the manufacturing side, is maintained especially for the purpose of giving instruction to those who are not able to take the work in the regular course, but who are willing to spend ten weeks in studying dairying. This course, as arranged, includes the theory of breeding and feeding dairy cattle and the management of dairy farms. Instruction is given in the diseases of dairy animals, to enable the student, who may become a creamery operator or manager of a milk establishment, to prevent the distribution of milk from diseased cows and to render such assistance as may be of value.

Considerable time is devoted to the practice work and to the manufacturing problems of the creamery. A modern creamery includes a great many machines which are complicated and require considerable attention. Hence, instruction is given in operating cream separators, pasteurizers, churns, pumps, and mechanical refrigerating machines and engines.

In butter and cheese making both theory and practice will be



View of one of the experimental poultry pens at the Kansas State Agricultural College.

taught in minute detail. Special stress is laid upon the manner, as to neatness and cleanliness, in which each man carries on his work.

The farm dairy course, which is designed chiefly for the producers of dairy products, is similar to that of the short course in dairying, except in this course the production of crops such as are needed on the dairy farm are studied; also the judging of dairy cattle and testing same for the advanced registries. Special work is given in carpentry and dairy mechanics pertaining to machinery used largely on dairy farms.

EQUIPMENT OF THE DAIRY DEPARTMENT.

The Dairy Department of the Kansas State Agricultural College is thoroughly equipped with all modern dairy apparatus. It has a complete working dairy, having in it five of the best dairy breeds. It has a large roomy sanitary stable, thoroughly equipped with modern milking machines and various kinds of power, such as may be used on the farm. It maintains a complete creamery, cheese factory, and ice-cream factory, with a thorough equipment, giving the student an opportunity of doing the best work and getting a valuable training.

POULTRY FARMING.

The poultry industry of the State of Kansas is fast occupying an important place in the realm of agriculture. Within the State already over $9,000,000 worth of poultry products are sold each year, not considering the immense consumption within the State. During the year of 1906 the poultry products were increased 25 per cent over those of 1905, and the prospects for the year of 1907 indicate even a greater increase.

Kansas has led in the production per capita of poultry and eggs for many years. According to the census of 1900 there was $9.32 worth of poultry and eggs sold for every man and woman in the State. Iowa comes second with $8.74. The value of the poultry products is one-twelfth of the total farming income. Poultry, as in the case of dairying, is a very profitable independent industry, but it also can be combined in many cases, with exceedingly great profits, with other classes of farming. To show what classes of farming, poultry farming is generally combined with, statistics are given below from the Department of Agriculture, which show the value of poultry products produced in connection with the different kinds of farming:

Kinds of farming.	Value of poultry products per farm.
Dairy farming	$38.69
Live-stock feeding	23.09
Hay and grain farming	18.36
Fruit farming	18.00
Vegetable farming	15.60

Poultry farming is generally taken up by men of stable industry. As people become more wealthy and better educated, the coarser articles of diet are supplanted by more wholesome and palatable foods. Thus it is that the consumption of pork per capita is decreasing while the amount of butter and eggs eaten by the average American is nearly twice as great as they were twenty years ago. For this reason poultry raising is carried on more extensively in progressive communities where the population is quite dense and where people live with the more modern conveniences.

THE NEED OF INSTRUCTION IN POULTRY RAISING.

The poultry in Kansas is raised largely upon farms. There are few people specializing in this particular line, and hence the poultry crop has been a side issue with the general farm practice. Very little attention has been paid to this industry as to whether it has proved profitable. The poultry is left largely to take care of itself and live on the waste products of the farm. While chickens are perfectly capable of taking care of themselves, and in many instances realize for their owners a handsome profit by this method, yet the business can be made much more profitable by taking proper care in selecting fowls that have proved to be great egg producers, or, if desired, that have proved to be early maturers and will become profitable from the standpoint of meat production. Instead of hatching birds of miscellaneous breeds it is a wise and profitable plan to hatch pure-bred birds of particular types and strains. The business can be made a profitable one by taking more care in hatching and rearing the chicks.

The marketing of eggs is becoming another feature that needs considerable study, owing to the fact that the recent grading system which has been adopted required that eggs must be fresh and clean, free from all filth and of a certain size, to go as first grade.

The Kansas State Agricultural College is offering two courses, one of twelve weeks, which is given in the regular course, and the other of ten weeks, which is given in the short course. Both courses are devised on a similar plan and cover the work as thoroughly as can be done from a theoretical and practical standpoint for the time allotted.

Instruction is given in a line that will show the most profitable

and practical ways of operating poultry farms, and such subjects are taken up practically, as the rearing, the breeding, the feeding, the incubating and the judging of poultry. Planning poultry houses and poultry fixtures is also a part of the work, as well as the handling and grading of eggs and the dressing of fowls.

The College maintains the most complete and elaborate poultry-producing plant in the State of Kansas. Twenty-four different varieties of pure-bred birds are represented at the College. This department also carries on in this connection many interesting experiments. The Kansas State egg-laying contest has been one of the great features of the department for the past three years. In connection with this, the department also operates a squab-raising plant, and some attention is given to this line of work, since it has become very profitable within recent years. The Kansas State game warden, in connection with this department, is operating an experimental department in the rearing of pheasants, and through these efforts it is expected that the State will be stocked with some of the wild game which it has been deprived of by the many unscrupulous hunters.

There is a great opportunity at the present time for young men to engage in this business and make it a very profitable and interesting line for their life work. The department affords every opportunity and gives as much assistance as is possible to young men who are willing to undertake this work. OSCAR ERF.

The Dairy and Poultry Department has a great many calls for positions to be filled on the dairy farm, creameries, ice-cream factories, milk condensers, etc. Positions have been filled ranging from $40 to $125. The dairy short-course students especially have been very fortunate in securing positions. Mr. H. E. Williamson, Manhattan, Kan., has secured a position as butter maker in the Agricultural College of Oklahoma; Mr. V. Holstrom, Vliets, Kan., has a position with the Blue Valley Creamery, St. Joseph, Mo., and is doing excellent work; Mr. M. T. Talley has charge of the Hall Summitt Creamery, Hall Summitt, Kan. Mr. A. J. Strom, one of our dairy students of 1906, has purchased the Dwight Coöperative Creamery Company, Dwight, Kan., and expects to build a large addition to the plant. Mr. Strom has made it a special point to study the markets in the large cities and has become a very successful business man. Mr. E. W. Titterington, dairy short course '06, Lawrence, Kan., accepted a position at Glenellyn, Ill., about fourteen months ago. He has now gone into partnership with the proprietor, and is one of the stockholders in a large creamery and cheese factory.

THE INDUSTRIALIST

Published weekly during the College year by the Printing Department of the

Kansas State Agricultural College

Manhattan, Kansas.

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PROF. J. D. WALTERS.....Local Editor
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Local Notes.

The annual competitive drill will take place next Tuesday. The usual prize, a gold-headed cane, will be awarded to the winning captain. Lieut. Emery S. Adams, 14th U. S. Infantry, who is visiting in the city, will be the judge. Lieutenant Adams graduated from this College in 1898.

Professor Roberts goes to Hays in a few days to conduct spraying experiments for killing the bind weed, under the new legislative act. He will be assisted by Mr. Geo. C. Morris, of the American Steel and Wire Company, of Chicago, which is lending the sprayer and furnishing some of the chemicals.—*Herald.*

President Nichols and Regent Story returned Tuesday from their trip to Lansing, Mich., where they attended the annual meeting of the American Association of Agricultural Colleges and Experiment Stations. The meeting was held in connection with the semi-centennial of the Michigan Agricultural College, the pioneer agricultural school.

The railroads have granted the College a Commencement rate of one and a third fare, on the certificate plan, for round trips from all points in Kansas, including St. Joseph and Kansas City, Mo. The certificates must be signed at the College by Miss Sarah Hougham, the editor of the *Jayhawker*, before they will be accepted for the return trip.

Prof. Oscar Erf is planning to devote the coming summer to the study of the dairy methods and conditions of Central Europe, *i. e.*, of Switzerland, Germany, Holland, and Denmark. He intends to leave for New York after Commencement, take passage to Naples, Italy, and then go north as the season advances. Mrs. Erf will accompany the professor on his trip and make stops at Luzerne, Zurich, Frankfort, and other places, while he will visit localities of special interest to the dairyman.

Cotner and Washburn have added two more scalps to the belt of our athletes. Both games were played at the Manhattan Athletic Park, the former on Wednesday of last week and the latter on Saturday. The scores stood 2 to 0 with Cotner and 2 to 1 with Washburn. This game settles Washburn's claim to the State championship. In the last issue of the Baker organ, the Methodists give up their claim. K. U. lost two out of three games to the Farmers, so there seems to be little question as to the champions unless Haskell wins from the Farmers Commencement day, which is hardly probable. K. S. A. C. evidently has the championship won.

Senior Student H. Brinkman has been asked by the city council of Emporia to prepare plans and specifications for a five hundred dollar band-stand for their city park.

Capt. Pearl M. Shaffer, of the 25th U. S. Infantry, who has been stationed here for about four years as instructor in military science, has received orders to be ready to leave with his regiment for the Philippines some time this summer. The captain has made an excellent record while with us. He is a model teacher, a model soldier and a model citizen. Officers of the regular army, detailed to teach students, are not always successful because of the great difference of the average student and average soldier. The captain was well liked from the start and will leave scores of friends behind, both among the Faculty and the students.

Alumni and Former Students.

A. B. Gahan, '03, assistant state entomologist, College Park, Md., receives his master's degree next week from the Maryland Agricultural College.

Laura L. Lyman, '06, has accepted the offer to take charge of the cooking school at Bethel Mission, in Kansas City, Kan. She will take charge the first of September.—*Students' Herald.*

Helena Pincomb, '01, has been fishing for tarpon in the Gulf of Mexico and has caught one of these gamiest of fish five and one-half feet long. She spent the winter with her sister, Minnie (Pincomb) Moats, '96, at Tampico, Mexico.

Estella Fearon, '03, has been teaching physical training in the Young Women's Christian Association of St. Louis. After spending the vacation at home, Manhattan, she will go to Wellesley College, Wellesley, Mass., as assistant in physical training.

Clara Goodrich, '03, visited the College and friends on her way home from Higginsville, Mo., where she has been teaching mathematics and science in the high school. Next year she will teach mathematics in the Roanoke (Ladies) College, Richmond, Va.

Invitations are out announcing the wedding of J. B. S. Norton, '96, to Miss Jennie Elizabeth Webster, of Hyattsville, Md. The wedding will take place June 19, at six o'clock, at the Presbyterian church, and they will be at home after August 1, at Hyattsville.

R. S. Kellogg, '96, is the author of circular No. 81 of the Forest Service, United States Department of Agriculture, which treats of "Forest Planting in Illinois." It gives the results of study of forest plantations in that state and general directions and suggestions applicable to that region.

Elizabeth Finlayson, '04, and D. H. Zuck, until recently farm foreman of the College, were married at the residence of the bride's parents, Summerfield, Kan., by the Rev. O. B. Thurston, Tuesday evening, June 4. The good wishes of many friends of this young couple accompany them to their home in eastern Colorado.

Lieut. Emory S. Adams, '98, Vancouver Barracks, Vancouver, Wash., is visiting friends in town. While here he will serve as judge in the competitive drill of the companies of the College battalion.

John J. Biddison, '04, writes: "I am now at Little Rock, Ark., as telegraph editor on the *Arkansas Gazette*, the leading paper of the back-woods state. I am coming back to God's country some day, but the "picking" is good here, so I will stick it out as long as I can. I left the city editorship of the *Chanute Sun* the middle of April."—*Jayhawker.*

Shigi Suzuki, special student last year, writes of his safe arrival at Tokyo, Japan. He says that many American travelers are visiting Japan. He saw about two hundred foreigners in a Japanese church one Sunday. He will start the dairy business on his farm before long. We learn from another source that he was married on the 28th of April.

Among the '01 letters in the last *Jayhawker* is one from Geo. Martinson, who is now practicing law in Manhattan, Nevada. That is one of the newest of the mining camps but promises to become a great producer. Mr. Martinson is prospering in his profession and well deserves his success, having worked his way through a three-years' law course in Leland Stanford University.

Ulysses Grant Houston, '81, in the *Jayhawker* for May has a very interesting account of a visit to the homestead of John Brown, where the old abolitionist and several of his family are buried. Notwithstanding the universality of some knowledge concerning John Brown, probably very few know anything concerning his final resting-place. Such articles from the alumni will do much to make the *Jayhawker* what it might be as an alumni organ.

At a recent visit to the Kansas City Veterinary College the excellence of the work being done by Dr. A. T. Kinsley, '99, and Dr. R. F. Bourne, '03, was found to be strongly manifested. The institution is in a very prosperous state and will be enlarged this summer. Doctor Kinsley is now on a trip in the East, partly as a vacation but also for the purpose of looking into the good points of veterinary institutions. In the meantime Anna (Smith) Kinsley, '01, and the baby are visiting the home folks.

It is reported that the Wyoming Agricultural College has tendered to Prof. W. H. Olin ['89], of the Colorado Agricultural College, the position of director of the Wyoming Experiment Station. Professor Olin is the agronomist at the Colorado Agricultural College and is one of the strongest men in his line in the country. He has done wonderful work in Colorado, and if the state board of agriculture permits him to leave Colorado there will be a general protest from the farmers of the state. Professor Olin is a graduate of the Kansas Agricultural College, and later devoted some time to the Ames, Iowa, institution, both as a special student and instructor.—*Breeders' Special.*

Chemistry, Botany and Entomology Number

THE

INDUSTRIALIST

Vol. 33 **No. 33**

Issued Weekly By

Kansas State Agricultural College

Manhattan, Kansas

The Chemical Department, Kansas State Agricultural College

J. T. Willard

The Department of Botany

H. F. Roberts

Entomology in Kansas State Agricultural College

E. A. Popenoe

Laboratory Work in Entomology

Geo. A. Dean

Published by

PRINTING DEPARTMENT

J. D. Rickman, Supt.

Entered at post-office, Manhattan, Kan., as second-class matter. Act of July 16, 1894.

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Miss Ula M. Dow, B. S. (K. S. A. C.).....Instructor in Domestic Science
William L. House.....Foreman of Carpenter Shop
Miss Gertrude Barnes.....Assistant Librarian
Louis Wabnitz.....Foreman of Machine Shops
Miss Ina E. Holroyd, B. S. (K. S. A. C.) .....Assistant in Preparatory Department
Ambrose E. Ridenour, B. S. (K. S. A. C.).....Foreman in Foundry
Miss Emma J. Short.....Assistant in Preparatory Department
Miss Ina Cowles, B. S. (K. S. A. C.).....Assistant in Domestic Art
Theo. H. Scheffer, A.M. (Cornell University).....Assistant in Zoölogy
Miss Kate Tinkey.....Assistant Librarian
Earl N. Rodell, B.S. (K. S. A. C).....Assistant in Printing
Miss Helen Thompson, B. S. (K. S. A. C.).....Assistant in Preparatory Department
Roy A. Seaton, B. S. (K. S. A. C.).....Assistant in Mechanical Engineering
M. Francis Ahearn, B. S. (Mass. Ag. College).....Foreman of Greenhouses
Miss Cecilia Augspurger (Illinois Wesleyan).....Assistant in Music
Miss Gertrude Stump, B. S. (K. S. A. C.).....Assistant in Domestic Art
M. Sheldon Brandt, Ph. B. (Yale).....Assistant in Architecture and Drawing
Heman A. Wood, B. S. (Olivet) .....Assistant in Chemistry
Chas. Yost.....Assistant in Heat and Power Department
Earle B. Milliard.....Foreman of Blacksmithing
J. T. Parker,.....Assistant in Woodwork
Wm. H. Andrews, A.B. (Chicago).....Assistant in Mathematics
Miss Leila K. McCotter, B. S. (Michigan).....Assistant in Mathematics
Miss Edetha M. Washburn, A.B. (K. U.).....Assistant in English
J. D. Magee, A.M. (Chicago) .....Assistant in Mathematics
E. G. Meinzer, A.B. (Beloit) .....Assistant in German
Miss Florence S. Latimer, B.M. (Ferry Hall Seminary).....Assistant in Music
Miss Marjorie Russell (Mechanics' Institute).....Assistant in Domestic Science
Herbert F. Bergman, B. S. (K. S. A. C.).....Assistant in Botany
C. A. Willson, B. S. (Mich. Agr. College).....Assistant in Animal Husbandry
Burton Rogers, D. V. M. (Iowa State College).....Assistant in Veterinary Science
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Miss Clara Willis (Framingham Normal).....Assistant in Domestic Science
C. O. Swanson, M. Agr. (Minn.).....Assistant Chemist, Experiment Station
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William C. Lane, B. S. (K. S. A. C.) .....Assistant in Physics
William R Lewis.....Janitor

THE INDUSTRIALIST.

VOL. 33. MANHATTAN, KAN., JUNE 15, 1907. No. 33

The Chemical Department, Kansas State Agricultural College.

The mention of chemistry to the average person brings up visions of powerful acids, violent explosions, subtle poisons, and vile smells. In addition to having these agents at his command the chemist is all too frequently supposed to possess almost magical powers in the way of analysis. A few drops of a substance or a pinch on the point of a knife-blade are supposed to be enough to enable him by the dramatic application of some of his powerful acids to tell the qualitative and quantitative composition, and the physiological effects that the substance in question would produce. As a matter of fact there is little spectacular in the study of chemistry or in the practice of a professional analyst. Analysis of a substance will usually involve a large amount of tedious work in which but few of the reagents employed would be classed as acids and the operations would present little of interest to the uninitiated on-looker. Furthermore, the development of chemical science is as yet so imperfect that analysis of complex natural products of the plant and animal world, either alone or in mixtures, at best, is very incomplete.

The study of chemical science in a college course is not to confer upon the regular student the skill to make analyses of complex substances, but it is to give him a minimum of a certain kind of knowledge that is essential to any fundamental understanding of nature and of the industries. Chemistry deals with the kinds of matter of which substances are composed and of the changes which these seventy or eighty kinds of matter may undergo in their interrelations. Probably twenty or twenty-five of the kinds of matter are all that, at present, play any important part in our civilization. As all weighable things consist of one or more of these kinds of matter it is obvious that an understanding of the tangible world, no matter from what point of view it is studied, must include a certain knowledge of chemistry. More than this, to a large extent the manifestations of the imponderable forces of heat, light, electricity, etc., are accompanied by chemical changes

in the matter with which the physical phenomena are associated. There can be no understanding of such physical phenomena without an understanding of the coincident chemical changes. In fact, chemistry and physics are indissolubly united in their phenomena, and no chemical change whatever takes place without some simultaneous physical manifestation.

The germination of a seed, the growth of the plantlet and its development into the giant tree, perhaps, in every stage depends upon chemical changes in matter. The absorption of food from the soil and the air contributes to the growth of the plant only as this food becomes organized into tissue and fixed in it by chemical action. The growth and nutrition of an animal is likewise an endless succession of chemical changes. The efficacy of medicine in modifying deranged processes of the organism depends upon chemical changes which it brings about. In fact, there is scarcely an activity in which the importance of chemistry cannot be demonstrated, and it is probably safe to assert that in those cases in which we cannot at present trace chemical influence our inability is due to our ignorance and not to a lack of dominance of chemical reactions.

At this institution the importance of chemistry is fully appreciated, although the time available for it is not commensurate with its importance. The effort is made, however, to utilize to the best advantage the time allowed. The work of the first term is alike for students of all the four-year courses and consists of a careful study of the non-metallic elements, using one of the best modern text-books accompanied by ample experiments and explanations in the lecture room. The latter part of the term, study of some of the more important metals and their compounds is pursued, time not permitting study of all the metals that term. In the next term students of the engineering and architectural courses complete the study of the metals and their compounds and receive, in addition, a course of lectures giving more details concerning the materials of construction, iron, steel, alloys, limestone, brick, cement, and plaster. A little time is also given by these students to some of the more important classes of organic compounds, as these not infrequently bear directly upon the practical work of the engineer.

The second term's work of students in the agricultural, veterinary, general science and domestic science courses in the class room is devoted to organic chemistry exclusively. The importance of this subject to this class of students can scarcely be overestimated, since it deals with the substances of which plants and

animals consist, those produced by them, and those used by them. Considering the difficulty and importance of the subject, the time is all too short, and in the case of students of the domestic science, veterinary and agricultural courses a later opportunity is taken the next year to give additional work in this line in the courses in human nutrition and animal nutrition. These courses in nutrition, however, are primarily designed to reinforce and amplify the chemical physiological knowledge of the student. Lectures are given which treat in a thorough manner of the chemical changes that the several classes of foods undergo in digestion, the function that each performs in nutrition and the transformations which they undergo in passing through the tissues. The relative value and need of the different food principles in the several classes of functions that the animal body performs are considered. Special attention is given to rations and dietaries, the use of standards, and the calculation of rations or dietaries that shall conform to any designated standard. In the course in animal nutrition special study is given to the several classes of grains, fodders, and other feeds, and the conditions that affect their general composition and usefulness.

The third term of the first year of chemistry for all courses includes a further study of inorganic chemical compounds. This involves a review of previous terms' work and additional general principles. It is especially designed to broaden the student's knowledge of chemistry, to unify it to a certain degree, and to make the science more useful to the student as well as to enhance its value as a disciplinary and culture study.

The students of the agriculture course give a few weeks to the study of soils and fertilizers in the junior year. In this the origin, mode of formation, general properties and adaptations of soils are studied in some detail. The relation of cropping to soil fertility and the conservation of fertility by rotation of crops and mixed husbandry are given special consideration. The sources of commercial fertilizers, the peculiarities and uses of different kinds, and their most economical employment is an important part of the work.

Accompanying the class work and supplementing it, laboratory work is required in nearly every course. This includes simple experiments designed to impart a knowledge of the nature of chemical action, a study of many of the natural minerals by means of the blow-pipe and their physical and chemical properties, and a laboratory course in qualitative analysis. The engineering students are given some exercise in the analysis of flue gases and

determination of the fuel value of coals. The agriculture students have a term in quantitative analysis which, after preliminary training in simple exercises designed to give skill in manipulation, is directed toward the analysis of materials of direct agricultural interest.

The Chemical Department is charged with the examination of a large portion of the samples of food stuffs taken under the provisions of the Kansas Food and Drugs Law. The Chemical Department of the Experiment Station is in charge of the inspection and analysis of concentrated feeding stuffs and commercial fertilizers sold in the State. There is a constant and increasing demand by individuals and corporations for quantitative chemical analyses. By reason of these various duties and demands the department affords a large opportunity for students electing chemistry as a specialty to obtain experience in practical work. While this can not be promised to all, the most capable are given opportunity to do work of this kind and are paid a suitable remuneration.

J. T. WILLARD.

The Department of Botany.

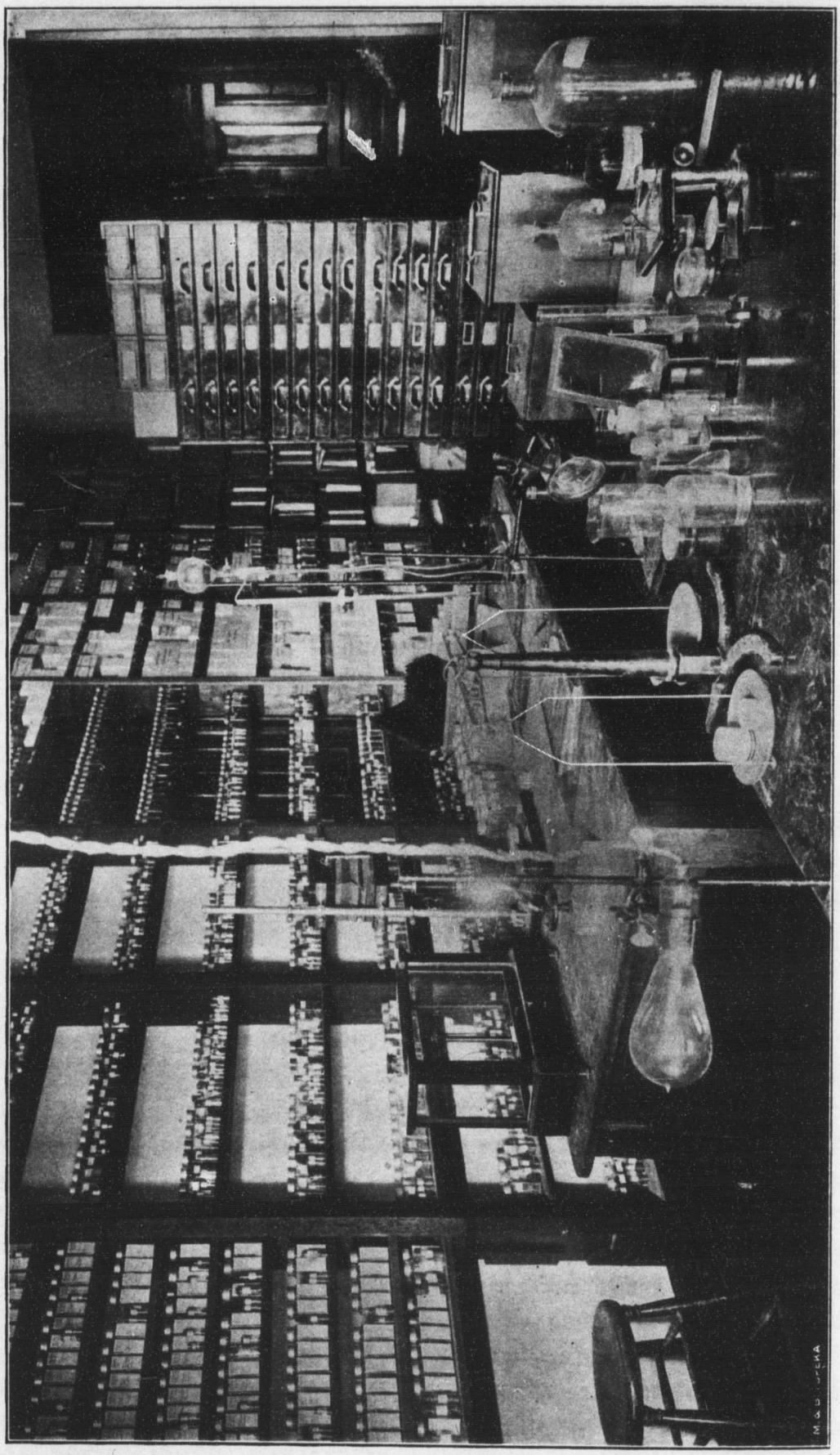
It used to be supposed that the study of botany comprised the collection and preservation of dried plants, and the learning of their names. The fact that many botanists gave and still give their time to this kind of work, and as teachers taught others this art and little else, signifies nothing. Such work bears the same relation to the science of botany that taxidermy does to zoölogy. Botany is the study of the life of the plants—how they grow, get food and reproduce; how they manage to live in different places and under different conditions of soil and climate; how they vary in consequence of different conditions without, or in response to unknown influences operating from within. What are nature's laws governing variations, and how can useful variations—better kinds of plants—be secured and preserved and made permanent by man? How can plant diseases be controlled? All this is the field of the working botanist to-day, and nowhere is this work more important than in an agricultural college and experiment station. The business of raising plants underlies all agriculture, since the raising of animals also depends upon the raising of proper plants. The accurate and detailed, in other words "scientific," knowledge of plant life is "botany," and the botanist differs from the farmer simply in his more exact and special knowledge of plant life and in his acquaintance with more kinds of plants. It stands to reason

that the more exact the farmer's knowledge of plants and of plant life is, in other words, the better botanist he is, the better farmer. Other things being equal he will necessarily be.

Every student who enters the institution receives botanical instruction for two terms, and in one of the courses for a third term. An excellent equipment exists for the purpose of teaching botany. Means of illustration are furnished by splendid series of charts, a stereopticon and projection lantern, microscopes, etc., besides the material afforded by the large seed and plant herbaria of the department. By these means, students in their early college years receive careful instruction in the development of the plant world, in the physiology of plants, their geographical distribution over the globe, and in the history of our cultivated and economic plants. Special courses are also provided for our advanced students in plant breeding and the diseases of crops. It will be seen that no science has such a direct and practical bearing upon agricultural industry, the industry of raising plants, as does the careful scientific study of the plants themselves.

First and foremost, good crops depend upon good seed, and in regard to seeds, farmers are subjected to unusual deceptions. In this connection our department has assumed voluntarily the work of "seed control," which means the analysis of seeds for purity and germination capacity. So much bad seed of alfalfa, clover and various commercial grasses has been marketed in Kansas during the past few years that it has become absolutely essential that seeds should be analyzed before sowing. Such analyses have been made by our department for farmers, seedsmen, retail merchants, and others, to the number of nearly one thousand in about one year and a half, and this absolutely without charge, except to non-residents of the State. This invaluable work will be vastly extended during the next two years, and should be supported by the people by means of a pure-seed law.

Good seeds do not always insure the best plants. To obtain these, plant breeding is necessary. Plant breeding means knowledge of many intricate laws of heredity and variation, and involves a quick insight into those things in a plant's appearance which indicate its value for economic ends. This work is strictly "botanical," and since no single man or group of men can become highly skilled in the breeding of many kinds of plants, specialization is necessary, and to the staff of the Botanical Department has been allotted by the director of the Station the breeding of wheat and alfalfa. In large plant nurseries, wheat and alfalfa plants are grown at equal distances from one another so that all the char-



Seed Laboratory, Botanical Department.

acters of each individual may be studied in detail and recorded. Every item in the plant structure is measured or described by means of elaborate apparatus and the results are filed in records for future reference. Nothing is regarded as too small or too insignificant to be seized upon by the breeder in his search for signs in the plants of good economic qualities which they may possess. Indeed our men make it their business to scrutinize wheat plants and alfalfa plants as a breeder of Herefords or of Shorthorns does his favorite breed. By this means we are enabled to make careful selections of individuals for breeding, and by deriving all our plant stocks from single individuals in the first instance we are enabled to secure pure races, something absolutely unknown to the seedsmen and unobtainable in the present market, and yet there is so much difference in quality and yield of different individuals that no one can estimate the financial value to the farmer accruing from the universal practice of growing pure and unmixed stocks of superior races of these plants. Not only by selection, but by hybridization are improvements introduced, and the making of hybrids as well as the selection of superior stocks, is all a part of "botany" at the Agricultural College and Experiment Station.

But even the most improved races of plants may be subject to one or another form of disease. To ascertain the agents causing plant diseases and to find means for combating the diseases themselves is another phase of botanical work of tremendous importance, and to which one member of our staff gives special attention. Not only those plants grow, the seeds of which have been sown, but also other plants called "weeds." To identify these for farmers and provide means for their eradication is another phase of our botanical work, and one for which the last legislature has made special financial provision.

It might be further added that one of the more important pieces of work in and by the Department of Botany is the working out of a scientific system of wheat grading, whereby it is hoped to bring the grading of wheat to as an exact a basis as the grading of cream in dairies, since the introduction of the butter-fat test.

It might be added in a general way that much of our work in plant breeding has been of a pioneer nature, especially with respect to the devising of various kinds of apparatus for making precise and accurate measurements of characters in grain. To those especially interested in some of our lines of work for the past twelve months reference is made to the following bulletins of the department:

Bulletin No. 133 (Feb. 1906).—"Alfalfa seed. Its adulterants, substitutes, and impurities, and their detection."

Bulletin No. 141 (Jan. 1907).—"Commercial seed of Brome-grass, and of English and Kentucky Blue-grasses: Adulterants and substitutes and their detection."

Press Bulletin No. 155 (Apr. 1907).—"Prevention of Sorghum and Kafir-corn smut." (A more extended general bulletin on the same subject is now in press.) H. F. ROBERTS.

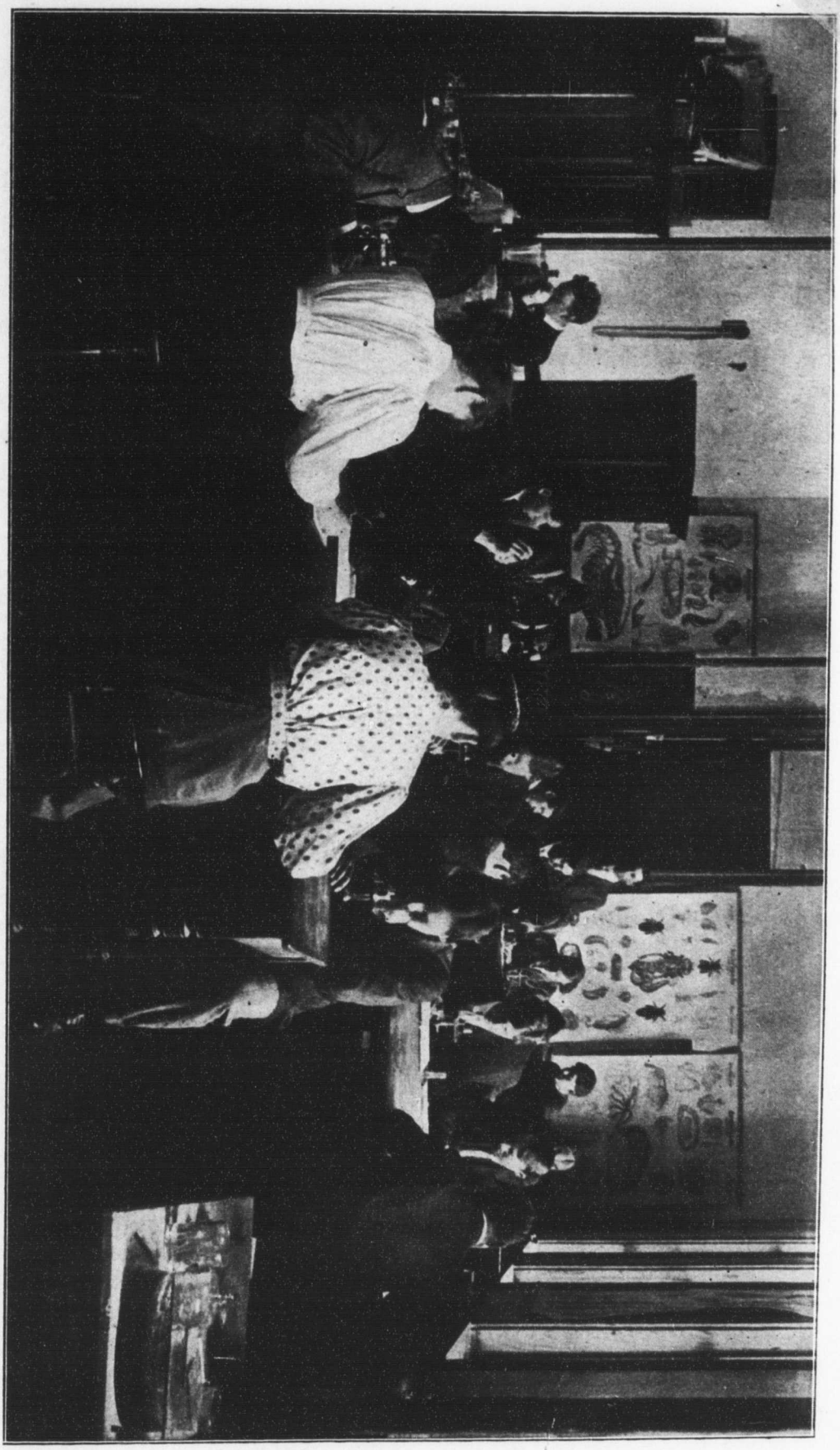
Entomology in Kansas State Agricultural College.

It is unnecessary to plead the value of entomological study in an institution founded with the objects of this College. Recognizing the study in its economic aspects alone, entomology appeals in a forcible way to the advocate of a practical education. The relations of insects to man's interests, whether of advantage or disadvantage, are manifold and of varied aspects. The loss annually caused by crop pests is enormous, not more so in our State than elsewhere, but everywhere that agricultural interests predominate, as they do here. It is a recognized fact that the results of the best culture are not rarely completely nullified by insect attack. Beneficial insects either directly or indirectly contribute largely to a man's well-being.

These broad facts are alone sufficient warrant for the study of entomology, especially so in a school devoted so largely to the economic application of facts as is the Kansas State Agricultural College.

But before discussing the relations of insects it is essential to know something about the insects themselves as organisms. The basic study, then, is structural and biological, and of insects as a class in the animal kingdom, regardless of economic relations. This foundation assured, the discussion of the economic aspects of insects is a mere matter of application of general principles to special phases. The required entomology of the several courses provides the foundation, and further, for a degree of special application, the latter however provided mainly through electives along special lines, available in the last two years of the College courses.

Passing to the claims of entomological study as a method of mental training, there is no study offering better training in observation and deduction, and no group of organisms allowing superior opportunity for study in structural and biologic aspects. When to this is added the facility with which abundant and varied



Laboratory Class in Entomology.

material is to be obtained, the claim of the study on educational lines alone seems to be well supported.

In the Kansas State Agricultural College a course in elementary entomology is given sophomores in agriculture, general science, and domestic science. Electives are offered in following years along special lines, as systematic entomology, insect biology, field laboratory and museum methods, and in the study of special groups of economic importance, as the insects of field crops, of the orchard and garden, of domestic animals, of domestic stores, with the related topics of repression of pests, and encouragement of useful insects, with the methods of field application.

The advantages of a large collection of entomological specimens illustrative of every phase of the subject, a well-equipped laboratory, and an ample and carefully selected library are open to every student. E. A. POPENOE.

Laboratory Work in Entomology.

All students taking the regular class work in entomology are required to take work in the laboratory two hours per week during the same term. The first half of the term is given to structural entomology. The common grasshopper is usually the first type taken for this study. A complete set of drawings, consisting of the external anatomy, with dissections and drawings of each part, is carefully drawn and properly labelled by each student. Enough of the structure is described to show how insects are builded up. Every effort is made to present these matters completely enough to give a foundation upon which further information may be added. On completing this work the student should be well acquainted with the terminology used in the systematic work which follows the structural. In the systematic work different types of the important orders are taken up and studied, so that the student may recognize at least the family and in many cases the group to which a specimen belongs, and thus, knowing the family, may be able to determine, by referring to some textbook, whether or not an injurious species is at hand.

The laboratory is well supplied with a large collection of duplicates of the important types, and is well equipped with microscopes and all of the apparatus necessary for practical work. Students are also encouraged to do field work, such as collecting insects to be studied later in the laboratory. The department furnishes at cost all the apparatus necessary to make a collection, which may be made with very little expense. GEO. A. DEAN.

THE INDUSTRIALIST

Published weekly during the College year by the Printing Department of the

Kansas State Agricultural College

Manhattan, Kansas.

PRES. E. R. NICHOLS.....Editor-in-Chief
PROF. J. D. WALTERS.....Local Editor
PROF. J. T. WILLARD.....Alumni Editor

Local Notes.

The Carnegie Library of Manhattan has 3332 bound volumes on its shelves.

K. S. A. C. *vs.* Leonardville, Thursday, June 6. Score 3 to 0 in favor of the College.

Professor and Mrs. Hamilton entertained the members of the professor's junior physics class at their home recently.

President Nichols attended the sixtieth anniversary of the University of Iowa, from which institution he graduated twenty years ago.

Miss Cecilia Augspurger, assistant in the Music Department, has resigned her position with the intention of staying with her invalid mother during the coming year.

Prof. David E. Lantz, formerly of this College and at present government expert in the biological survey division, has recently published a bulletin on "The Extermination of Rats."

Asst. M. S. Brandt, of the Department of Architecture and Drawing, goes to Globe, Arizona, next Wednesday to work as mining engineer in a copper mine during the vacation.

The College Y. M. C. A. building is growing and will soon be out of the ground. The foundations are practically completed and a large quantity of brick and lumber has been received and stacked up.

The Senior-Faculty game at Athletic Park last Monday afternoon resulted in an overwhelming victory of the former. The Faculty was hampered by the enforced absence of several of its best players.

The "High Potentials" and the "Superheaters," the senior teams of the Electrical and Mechanical Departments, played a game at Athletic Park last Saturday with a score of 35 to 9 in favor of the electricals.

The senior class books arrived last Monday and were delivered on Tuesday. The volume is neatly gotten up, quite similar to those of the last half dozen years, and full of pictures and reminiscences. It sells for $1.25.

The Manhattan Chautauqua will be held in Sarber's Grove, on the east side of the Blue, from July 17 to 26, inclusive. Extensive preparations for tents, refreshments, music and a fine platform program have been made, and nothing will be left undone to make it a success.

The summer class in domestic science numbers fifty students. They are a bright lot of young women and Prof. Henrietta Calvin reports that they are working hard. Their homes are distributed in twenty three counties and two states.

The annual reception given by President and Mrs. Nichols to the members of the senior class occurred Friday evening, June 7. The host and hostess were assisted by Professor and Mrs. Valley and Professor and Mrs. Brink. All report a good time.

The bids for the foundation walls for the new greenhouse were opened on Friday and contract was awarded to Stingley brothers, of Manhattan, whose bid was $745 for the excavating and stone-work. Four bids were received ranging from the above figure to $1075.

The *Boston Herald* of May 7 publishes a portrait of Miss Lucile Brown, and also a notice of her accomplishments as a singer. Miss Brown is the daughter of Prof. A. B. Brown, so long at the head of the Music Department here, and it is a pleasure to know that Miss Lucile is showing such talent in music. She has had a prominent part in several musical programs recently, both as a soloist and pianist.

There is to be a students' judging contest at the American Royal live-stock show at Kansas City this fall with trophies and cash prizes amounting to $700. This is a new feature for the Royal, and in its scope and detail it will be the most important ever held at any stock show. The Kansas City Stock Yards Company announced that it would give a $500 cup to be awarded to the winning team while the live-stock show appropriated $200 in cash to be divided in individual prizes. The contest will be open to all colleges of agriculture. The students' judging is to take place two days before the official awards are made. John Hazelton, formerly superintendent of publicity for the stock show, is to be superintendent of the judging contest.

The summary of students whose names will appear in the annual catalogue which is expected to arrive from the State printing-office before Commencement is as follows:

	Men.	Women.	Totals.
Graduate	13	11	24
Senior	87	46	133
Junior	100	49	149
Sophomore	199	70	269
Freshmen	293	118	411
Sub-Freshmen	366	145	511
Preparatory	122	22	144
Special	21	27	48
Dairy	23	...	23
Farmers' Short Course	179	...	179
Domestic Science Short Course	....	134	134
Counted twice	*47*	*41*	*88*
Totals	1356	581	1937

From 100 counties of Kansas, 1894.
From fourteen other states, 35.
From Philippine Islands, 8.

Died, on Thursday, June 6, Harold E. Cate, of Eskridge, Kan. Mr. Cate entered College in the fall of 1904 and attended classes till a few days before his death. He died of abscess on the brain. The remains were buried on Saturday. Mr. Cate was a promising young man and a good student.

The competitive drill between the four companies of the College battalion was held last Tuesday afternoon, Lieut. E. S. Adams, '98, of the 14th U. S. Infantry, acting as judge. Company A won the first place, and Captain Lupfer received the gold-headed cane—the usual prize for the best-drilled company.

The Agricultural College intends to have a large exhibit of various agricultural and horticultural products and a few head of fine stock at the interstate fair and exposition in Kansas City in September. Professor TenEyck has requested the management of the interstate fair to reserve wall space and table space for the Kansas Agricultural College exhibit.

Alumni and Former Students.

C. C. Smith ['94] has purchased an orange grove in the suburbs of Pomona, Calif.—*Mercury.*

A. B. Nystrom, who graduates at the K. S. A. C., has accepted the position of assistant professor of dairy mechanics in the Ohio State University.—*Mercury.*

Mr. and Mrs. Chas. Marlatt ['84], of Washington, D. C., are the parents of a little daughter. This is W. Marlatt's first grandchild and he is bearing the honor with becoming modesty.—*Republic.*

W. L. Harvey, '02, was graduated from the Washburn College School of Law last week. He has not lost his interest in agriculture, however, as he owns three hundred twenty acres of Oklahoma bottom-land.

W. F. O'Harro, second-year student in 1886, now a farmer of Clay county, visited the College with his two daughters this week. He is looking for a place to send them to school, and naturally turned in this direction.

J. A. Correll is expected home Saturday from Boston, Mass., where he has graduated from the Boston Institute of Technology. He is a K. S. A. C. graduate of 1903, and is a son of Mr. and Mrs. J. M. Correll.—*Nationalist.*

Miss Jessie Sweet ['05], who has been teaching in Evanston, Ill., is visiting her parents, Mr. and Mrs. B. F. Sweet. She will leave soon for Milwaukee, Wis., where she will have charge of the Y. W. C. A. summer resort cottage.—*Mercury.*

Lucian R. Stanfield, brother of W. W. Stanfield, '05, and a student here in 1905, has been elected professor of manual training at the Chase County High School. His duties will begin next September. At present Mr. Stanfield is a student at the Manual Training School for Teachers at Pittsburg, Kan.

Mrs. Chas. Hatch has gone to Glenville, Neb., to attend the wedding of her sister, Miss Clara Newell ['96], to Mr. L. L. Brandt to-day. Miss Newell clerked in the Spot Cash some years and Mr. Brandt is a young business man of Glenville.—*Mercury.*

Prof. R. W. Clothier, '97, of the University of Florida, Gainesville, with his wife and children are visiting with Mrs. Clothier's parents, Doctor and Mrs. Blachly. Professor Clothier is taking a special course in dairy manufactures and may remain through the summer, but his plans are not fully matured.

C. A. Kimball, '93, and E. W. Kimball, '02, have recently made their paper a semi-weekly in a novel manner. They publish the *Manhattan Enterprise* on Tuesdays and the *Republic* on Fridays. C. A. edits the *Republic* and E. W. the *Enterprise*, and between the two it requires an active item to escape them.

Changes of address: A. N. H. Beeman, '05, 1232 Michigan Avenue, Kansas City, Mo.; M. R. Shuler, '05, Clifton, Kan.; A. E. Oman, '00, Neihart, Mont.; W. S. Sargent, '01, Kemmerer, Wyo.; Maude Zimmerman, '02, Moray, Kan.; Geo. M. Logan, '02, 511 E. Market street, Akron, O.; D. M. Ladd, '01, 652 E. 57th street, Chicago, Ill.; Etta M. Barnard, '02, Manhattan, Kan.; K. C. Davis and Fannie (Waugh) Davis, '91, Canton, N. Y.

The Commencement and vacation season is marked by the return of many graduates to visit relatives, friends, and the College here. Among them are the following: Laura Day, '93, Menomonie, Wis.; Pearl Holderman, '03, Chetopa, Kan.; Elizabeth Sweet, '04, Burlington, Kan.; E. E. Greenough, '06, Lo Lo, Mont.; Ruth Neiman, '06, Whitewater, Kan.; Edith Forsythe, '06, Dwight, Kan.; Gertrude (Lyman) Hall, '97, Washington, D. C.

The following is the matter-of-fact way in which the *Enterprise* chronicles an event which, though in contemplation for many years, in its culmination came as a complete surprise to all but a very few. The College contingent will join most heartily in wishing an abundance of prosperity and happiness to this estimable couple: "The home of Mrs. Agnes Minis, on Moro street, was the scene of a quiet but pretty wedding Saturday evening when her daughter, Miss Margaret J., became the bride of Mr. Milton D. Snodgrass ['06]. Rev. J. H. Lee performed the ceremony at six o'clock, the only guests present being the immediate relatives of the bridal party. No two young people in the city are better known and more highly esteemed than Mr. and Mrs. Snodgrass, and their presence, especially among the College people, will be greatly missed. The bride graduated from the K. S. A. C. in 1901 and has since that time served most efficiently as librarian at the College. The groom is a most worthy young man and has been employed in the Agronomy Department of the K. S. A. C. He now has a responsible position in the government experiment work at Kadiak, Alaska, for which place the happy couple left Saturday night. The best wishes of scores of friends will follow them to their new home."

THE INDUSTRIALIST

Vol. 33 **No. 34**

Issued Weekly By

Kansas State Agricultural College

Manhattan, Kansas

Published by

PRINTING DEPARTMENT

J. D. Rickman, Supt.

Entered at post-office, Manhattan, Kan., as second-class matter. Act of July 16, 1894.

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JULIUS T. WILLARD, M.S. (K.S.A.C.).....Professor of Chemistry
EDWIN A. POPENOE, A.M. (Washburn).....Professor of Entomology and Zoölogy
BENJ. L. REMICK, Ph.M. (Cornell College).....Professor of Mathematics
BENJ. F. EYER, B.S. (Armour Inst. of Tech.).....Prof. of Physics and Electrical Engineering
HERBERT F. ROBERTS, A.B. (U. of K.), M.S. (K.S.A.C.).....Professor of Botany
WILLIAM A. MCKEEVER, Ph.M. (Univ. of Chicago).....Professor of Philosophy
EDMUND B. MCCORMICK, S.B. (Mass. Inst. Tech.). Prof. of Mech. Engineering, Supt. of Shops
ALBERT DICKENS, M.S. (K.S.A.C.).....Professor of Horticulture, Supt. of Grounds
CLARK M. BRINK, A.M. (U. of R.), Ph.D. (Univ. of City of New York)....Professor of English
ALBERT M. TEN EYCK, B. Agr. (Wisconsin).....Professor of Agronomy, Supt. of Farm
MRS. HENRIETTA W. CALVIN, B.S. (K.S.A.C.).....Professor of Domestic Science
RALPH R. PRICE, A.M. (U. of K.).....Professor of History and Civics
JULIUS E. KAMMEYER, A.M. (Central Wesleyan College).....Professor of Economics
OSCAR ERF, B.S. Agr. (Ohio State University).....Professor of Dairy Husbandry
PEARL M. SHAFFER, Captain Twenty-fifth Infantry, U.S.A.....Professor of Military Science
JOHN V. CORTELYOU, A.M. (Uni. of Neb.), Ph.D. (Heidelberg).....Professor of German
OLOF VALLEY, B.M. (Chicago Conservatory).....Professor of Music
F. S. SCHOENLEBER, D.V.S. (Chicago Vet. College).....Professor of Veterinary Science
ROLAND J. KINZER, B.S.A. (Iowa State College).....Professor of Animal Husbandry
JOSHUA D. RICKMAN.....Superintendent of Printing
BENJ. S. MCFARLAND, A.M. (Miami).....Principal Preparatory Department
MISS MARGARET J. MINIS, B.S. (K.S.A.C.).....Librarian
MISS MARGUERITE E. BARBOUR (Sargent Nor. Sch. Phys. Tr.), Director of Physical Training
MISS ANTONETTA BECKER (Drexel).....Superintendent of Domestic Art

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MISS LORENA E CLEMONS, B.S. (K.S.A.C.).....Secretary

JACOB LUND, M.S. (K.S.A.C.).....Superintendent Heat and Power Department
JOHN H. MILLER, A.M.....Superintendent Farmers' Institutes
CLARENCE L. BARNES, D.V.M. (Cornell University).....Asst. Professor of Veterinary Science
JOHN O. HAMILTON, B.S. (Chicago).....Assistant Professor of Physics
ANDREY A. POTTER, S.B. (Mass. Inst. Tech.).....Asst. Professor of Mechanical Engineering
ROBERT H. BROWN, B.M. (Kan. Con. of Music), B.S. (K.S.A.C.).....Asst. Professor of Music
BENJ. R. WARD, A.M. (Harvard).....Assistant Professor of English

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Miss Ada Rice, B.S. (K.S.A.C.).....Instructor in English
Miss Ella Weeks, A.B. (U. of K.).....Instructor in Drawing
Miss Daisy Zeininger, B.A. (Fairmount).....Instructor in Mathematics
George F. Freeman, B.S. (Ala. Polytech. Inst.).....Instructor in Botany
Geo. C. Wheeler, B.S. (K.S.A.C.).....Instructor in Animal Husbandry
Leonard W. Goss, D.V.M. (Ohio State University).....Instructor in Veterinary Science
Geo. A. Dean, M.S. (K.S.A.C.).....Instructor in Entomology
Robert E. Eastman, M.S. (Cornell University).....Instructor in Horticulture
Miss Ula M. Dow, B.S. (K.S.A.C.).....Instructor in Domestic Science
William L. House.....Foreman of Carpenter Shop
Miss Gertrude Barnes.....Assistant Librarian
Louis Wabnitz.....Foreman of Machine Shops
Miss Ina E. Holroyd, B.S. (K.S.A.C.).....Assistant in Preparatory Department
Ambrose E. Ridenour, B.S. (K.S.A.C.).....Foreman in Foundry
Miss Emma J. Short.....Assistant in Preparatory Department
Miss Ina Cowles, B.S. (K.S.A.C.).....Assistant in Domestic Art
Theo. H. Scheffer, A.M. (Cornell University).....Assistant in Zoölogy
Miss Kate Tinkey.....Assistant Librarian
Earl N. Rodell, B.S. (K.S.A.C).....Assistant in Printing
Miss Helen Thompson, B.S. (K.S.A.C.).....Assistant in Preparatory Department
Roy A. Seaton, B.S. (K.S.A.C.).....Assistant in Mechanical Engineering
M. Francis Ahearn, B.S. (Mass. Ag. College).....Foreman of Greenhouses
Miss Cecilia Augspurger (Illinois Wesleyan).....Assistant in Music
Miss Gertrude Stump, B.S. (K.S.A.C.).....Assistant in Domestic Art
M. Sheldon Brandt, Ph.B. (Yale).....Assistant in Architecture and Drawing
Heman A. Wood, B.S. (Olivet).....Assistant in Chemistry
Chas. Yost.....Assistant in Heat and Power Department
Earle B. Milliard.....Foreman of Blacksmithing
J. T. Parker.....Assistant in Woodwork
Wm. H. Andrews, A.B. (Chicago).....Assistant in Mathematics
Miss Leila K. McCotter, B.S. (Michigan).....Assistant in Mathematics
Miss Edetha M. Washburn, A.B. (K.U.).....Assistant in English
J. D. Magee, A.M. (Chicago).....Assistant in Mathematics
E. G. Meinzer, A.B. (Beloit).....Assistant in German
Miss Florence S. Latimer, B.M. (Ferry Hall Seminary).....Assistant in Music
Miss Marjorie Russell (Mechanics' Institute).....Assistant in Domestic Science
Herbert F. Bergman, B.S. (K.S.A.C.).....Assistant in Botany
C. A. Willson, B.S. (Mich. Agr. College).....Assistant in Animal Husbandry
Burton Rogers, D.V.M. (Iowa State College).....Assistant in Veterinary Science
Henry D. Scudder, B.S. (Illinois).....Assistant in Agronomy
Miss Clara Willis (Framingham Normal).....Assistant in Domestic Science
C. O. Swanson, M.Agr. (Minn.).....Assistant Chemist, Experiment Station
Herbert H. King, M.A. (Ewing College).....Assistant in Chemistry
Edw. C. Crowley, Ph.B. (Yale).....Assistant in Chemistry
Hugh Oliver.....Assistant in Heat and Power Department
Miss Charlaine Furley, B.A. (Fairmount).....Assistant in Preparatory Department
Miss Jessie Reynolds, A.B. (K.U.).....Assistant in Preparatory Department
Miss Anne M. Boyd, A.B., Lib. Sci. (Jas. Millikin Univ.).....Assistant Librarian
D. M. Wilson.....Assistant in Dairy Husbandry
Leland E. Call, B.S. (Ohio State University).....Assistant in Agronomy
Miss Mary F. Nesbit, A.B. (Illinois University).....Assistant in Mathematics
Miss Annette Leonard, A.B. (K.U.).....Assistant in English
William C. Lane, B.S. (K.S.A.C.).....Assistant in Physics
William R Lewis.....Janitor

THE INDUSTRIALIST.

VOL. 33. MANHATTAN, KAN., JUNE 29, 1907. No. 34

Retrospect.

The year just closed has been a most successful one—in many respects the most successful in the history of the College. The attendance was near the two-thousand mark; the discipline was perfect, with scarcely an exception; the student body was enthusiastically at work from September to June, and the Faculty was harmonious and of good cheer. The State legislature, for the first time in nearly half a century, treated the College as the great technical school of the common people and made its appropriations with a liberal hand. There were no epidemics among the students, no losses to the institution of property from any cause. It was a year of progress all along the line; a year of hard work well performed.

BUILDING IMPROVEMENTS.

Chief among the many building improvements made during the past year ranks the new Horticultural Hall. This building, costing with its attached greenhouses over $50,000, is one of the finest and most substantial educational buildings in the State. It contains twelve large classrooms and laboratories, several offices and private laboratories, roomy halls and stairways, a photographic dark room, two fire-proof vaults, etc. It is situated at the north end of the semicircle formed by the main College buildings and exhibits the very pleasing though plain modern Romanesque architecture of the older structures. It is built of white Manhattan limestone, which was quarried in the north pasture of the College farm, and is a credit to State Architect Stanton, who planned it, to Professor Walters, who superintended it, and to Stingley Brothers, of Manhattan, who were the contractors.

Of other improvements may be named the erection of two roomy additions to the power-house, the building of a 156-foot smoke-stack on the west side of the heating plant, the completion of the new $6000 seed barn, and the erection of a number of cattle sheds. The grounds around the new Horticultural Hall were leveled and seeded to blue-grass, and most of the roads on the

campus were dressed with a heavy coating of crushed rock macadam.

ATTENDANCE.

The main ingredient of the conglomerate of parts that form a modern educational institution is the student. Buildings, funds, apparatus, professors and libraries are absolutely necessary. The modern technical school differs in this respect from the hypothetical university, often cited by orators, which consists of a student at one end of a log and a professor on the other. It requires an immense amount of costly machinery to educate modern scientists, but this machinery is but a means, while the improvement of the student is the end. The summary of students whose names will appear in the annual catalogue is as follows:

	Men.	Women.	Totals.
Graduate	13	11	24
Senior	87	46	133
Junior	100	49	149
Sophomore	199	70	269
Freshmen	293	118	411
Sub-Freshmen	366	145	511
Preparatory	122	22	144
Special	21	27	48
Dairy	23	...	23
Farmers' Short Course	179	...	179
Domestic Science Short Course	....	134	134
Counted twice	*47*	*41*	*88*
Totals	1356	581	1937

From 100 counties of Kansas, 1894.
From fourteen other states, 35.
From Philippine Islands, 8.

It will be seen that the Agricultural College is not a local institution, but that it draws its students from all parts of the State and from many parts of the country.

Compared with the attendance of former years there has been an almost phenomenal increase. The total attendance last year was but 1690, hence there has been an increase of 247 students, or a growth of nearly 15 per cent. No other state agricultural college in America or elsewhere reaches or has ever reached these figures.

The following table gives the total attendance and the number of graduates of the College from ten to ten years since 1878-79. The table begins with the year named because it is the first of which we have comparative figures:

College year.	Total attendance.	Graduates.
1878-'79	207	9
1888-'89	445	25
1898-'99	870	53
1906-'07	1937	117

It will be seen that the students have increased at a far greater ratio during the past eight years than they increased during any of the ten-year periods.

COLLEGE ATHLETICS.

We should be pardoned if we permit the INDUSTRIALIST at the close of the year to "rise and remark" that it has also been a glorious period of victories on the athletic field. The College authorities have always given encouragement to its athletic teams. At no time were our teams in condition to employ a special teacher or coach, but had to get along as best they could by voluntary work on the part of enthusiastic students or members of the Faculty, who gave their work practically free of cost. But as the College grew the number of good "timber" increased and victories in the field multiplied until this year, when the College won the championship of the State. The College team has played a total of 22 games, of which 18 were won and 4 lost, making the percentage .818, the highest in the history of the College, and with eight more games on the schedule than that of any former year. The percentage of last season was .760, with 16 games played. The only other record which approaches either of these is that of the season of '03, with a percentage of .727 and 11 games played. Kansas State Agricultural College is proud of her "state champion" ball team.

FARMERS' INSTITUTES.

It was found to be impossible to hold as many regular institutes in the year 1906-'07 as in the previous year because of lack of funds, but a brief summary of work accomplished by this department may be of interest, showing the ever widening lines of agricultural college extension now being carried on by the Kansas State Agricultural College.

Number of regular Farmers' Institutes, 135; attendance 20,200. Fifteen speakers from the Agricultural College and Experiment Station gave a total of 304 days of service with 408 public addresses. Of these institutes 85 held one-day meetings and 50 held two-day meetings, with a total of 358 sessions. Local speakers to the number of 589 addressed these institutes, giving a total of something over 600 addresses. Six picnics were attended in the summer of 1906 and the total number of listeners estimated at 1500. Eight chautauquas were addressed by College speakers with listeners estimated at 2185. Two "wheat trains" were conducted in August, '06, one over the Santa Fe with an attendance of 7300, another over the Union Pacific in western Kansas with an attendance of 3860, and an "alfalfa train" over the Santa Fe in

eastern Kansas in June, 1907, with estimated attendance of about 5700, or a total of 16,760, a grand total of attendance at chautauquas, picnics, institutes and trains of 40,585.

This department also provided for addresses for more than twenty teachers' institutes and for seven district associations.

The State Farmers' Institute authorized by the Regents one year ago was held during the College Christmas vacation, the time being devoted to corn and stock judging, with an enrolment of 142 students and an attendance of over 800 at the several State conventions held at the College during that time. Supt. J. H. Miller, of the Institute Department, also had printed for distribution special issues of the INDUSTRIALIST and special bulletins to the number of 78,500. Nine of the twenty-one county high schools were visited during the year, and addresses were made to the students and conferences were held with the principals relative to having agriculture introduced into the course of study.

The boys' "corn contest," continued this year as last, has reported to date over 2800 contestants, with sixteen counties yet to hear from.

There has grown up within this department a sort of extension work with boys and young men, looking to the securing of a large number of young people who will work out simple crop, feeding and dairy demonstrations which will probably result in a "correspondence school" for young people not yet ready to enter College.

Since October, 1905, the College has been able to reach with agricultural addresses a total of over 90,000 people and has reached with regular meetings or with trains 102 of the 105 counties in Kansas, the only exceptions being Cheyenne, Finney, and Kearney.

Since October, 1905, emphasis has been placed by this department on the two subjects of corn and wheat. The plan of work for the coming year, 1907-'08, calls for a "live-stock campaign," emphasizing not only the need and advantage of raising more live stock, but instruction in methods of raising, feeding, and marketing.

MISSOURI PACIFIC CORN AND DAIRY TRAINS.

In January the Missouri Pacific railroad ran a "corn train" over their lines in southeastern Kansas, holding fourteen meetings in as many towns, with a total attendance of 3960. This train was accompanied by Supt. J. H. Miller and Asst. M. D. Snodgrass.

During the last two weeks of March the same railroad company ran a "dairy train" over their lines in the central part of the State. This train carried a complete working dairy, including a pneumatic milking machine. The dairy machinery was operated by

Professor Erf. Director Burkett, of the Experiment Station, was with the train part of the time.

THE SANTA FE ALFALFA TRAIN.

The credit for the first railroad "alfalfa" school must be given to the Santa Fe railroad and to the Kansas State Agricultural College. The train left Topeka on Monday morning, June 10, under direction of Mr. R. E. Wilson, of the industrial department of the railroad, accompanied by Prof. A. M. TenEyck, Asst. G. C. Wheeler and Supt. J. H. Miller, of the Kansas State Agricultural

The Alfalfa Train at Potter.

College, who were the "alfalfa" missionaries. As guests, Mr. James Atkinson, of the *Iowa Homestead*, Des Moines, Ia., and Mr. I. D. Graham, of the *Kansas Farmer*, were with the train for two days. At Wilder, Hon. Edwin Taylor, one of the Regents of the Agricultural College, joined the train and helped relieve the three regular speakers for overflow meetings, or where speakers were "dropped off." The extension department of the College found that twenty counties in eastern Kansas touched by the Santa Fe have about ten thousand fewer acres of alfalfa than Jewell and Cloud counties alone.

The itinerary of the alfalfa train was from Topeka to Atchison, thence to Leavenworth, Holliday, Olathe, Ottawa, and south to Cherryvale, west to Moline, north to Osage City, east to Ottawa, thence to Lawrence and Topeka. It also made side trips to Burlington, Yates Center, Girard, and to Fredonia, making seventy-

two stops, and with audiences aggregating nearly 6000, not counting children. It made all the way from one to nine stops in a county; one stop only in Wyandotte county, but nine in Franklin county, with a total attendance of 500; seven stops in Osage county, with an attendance of 420.

Emphasis was made in all lectures on (1) value of alfalfa as a fertility crop and for feeding, (2) importance of pure seed, and (3) necessity of good seed-bed. From thirty to forty minutes were given to the lectures, with five minutes for questions. There is

The Alfalfa Train in Nortonville.

no question but that the "alfalfa" train will show more immediate returns than any other "institute train" that the Santa Fe or any other road has run. The papers of the territory must be given credit for the most liberal advertising ever given such a train, and the local farmers' institute officers gave it much time and attention. In many places the commercial clubs, as at Cherryvale, took hold and did much to make the meeting a success.

APPROPRIATIONS.

Space does not permit the mentioning of all the many items of growth that might interest the friends of the College. We can truly say that the institution is in good working order and ready for another year of increased effort. The legislature has done well by us. We did not get the appropriations asked for, nor did we get what we could have used to good advantage, but we were

provided with means for additional growth. The coming biennial period will witness the erection of new buildings for the Departments of Domestic Science, Veterinary Science, and Engineering, the construction of about 25,000 square feet of first-class cement walks and road crossings, the erection of a coal-house, the installation of new boilers and fire stokers, and a large number of minor improvements on the College farm and at the Hays Branch Experiment Station.

The amounts appropriated by the State legislature are as follows:

	1908.	1909.
Current expenses	$140,000	$155,000
Domestic Science building	70,000	.....
Veterinary building	70,000	.....
Engineering building, etc	.....	80,000
Boilers and coal-house	5,000	5,000
Library stacks	4,000	.....
Cement walks	4,000	.....
Farmers' institutes	4,500	6,000
Five stokers	.....	3,000
Pipe machine	1,500	.....
Totals	$299,000	$249,000

The following are the appropriations for the Fort Hays Branch Experiment Station:

	1908.	1909.
Current expenses	$10,000	$10,000
Roads and fences	2,000	2,000
Office and fire-proof vaults	.....	1,500
Steam plowing outfit	3,500	.....
Teams and equipment	2,000	1,000
Machinery	1,000	1,000
Pure-bred cattle and experiments	5,000	5,000
Building repairs	500	500
Superintendent's residence	3,000	.....
Cottages	1,000	1,000
Horticulture and forestry	2,000	2,000
Dam and water system (extensions)	2,000	1,000
Totals	$32,000	$25,000

These items, together with the regular income of the College, amounting to about $65,000 per year, will place the institution in condition to do its work and to prepare for the reception of the rapidly increasing number of students that are coming to the great agricultural college of the State for their education. Several new laws that have intimate bearing on the work of the College were published in the INDUSTRIALIST this spring. Besides the above appropriations, emergencies of $1000 for farmers' institutes and $4000 for barn at Fort Hays Branch Experiment Station, available in 1907, were passed.

THE PRINTING-OFFICE.

The College print-shop has been one of the busiest parts of the institution. Superintendent Rickman has fully sustained his good name as a "worker" during the year by making several improvements and issuing regularly the three College publications, namely, the weekly INDUSTRIALIST, the weekly *Students' Herald*, and the monthly *Jayhawker*. The department has also printed and mailed eight Experiment Station pamphlet bulletins, a total issue of 212,000, and has printed and mailed a number of press bulletins. Beside this regular work, the print-shop has turned out a large amount of job printing for the Executive office, the Experiment Station, the different College departments, and the College societies and associations.

THE EXPERIMENT STATION.

The Kansas State Experiment Station has done much valuable scientific research work during the year, though but little can be reported here. The Department of Agronomy has extended its experiments in corn breeding and has sold several hundred bushels of highly improved corn in small quantities to actual farmers in all parts of the State. Extensive work in improving wheat, commenced many years ago, was done on a large scale. Another line of valuable experiments by this department was the testing of soils, especially with regard to their capability of retaining moisture. Valuable experiments were made with commercial fertilizers used upon small grain of many kinds and varieties. The Horticultural Department continued its testing of several hundred kinds and varieties of vegetables. Much time was also given to work in orcharding and forestry, to experiments in building oil roads, and to experiments in spraying. The Animal Husbandry Department extended its experiments in feeds and feeding. The Dairy Department published several valuable bulletins on the grading of cream, variations in separator tests, effect of bacteria in wash-water of butter, the use of commercial acids in ripening cream, the disposal of dairy and farm sewage, and many problems in poultry keeping. The Botany Department did a large amount of valuable scientific and practical work in improving grains, grasses, and alfalfa. The Chemistry Department did a large amount of very valuable scientific work in testing the many varieties and strains of wheat on trial in the fields of the experimental farms of the College. Complete chemical analyses of the wheat and its milling products have been and are being made. Digestion and nutrition experiments are also carried on. This

department has also charge of the registration and inspection of feeding stuffs and fertilizers. The recent acts of the State legislature with reference to these and to dairy products and meats have greatly increased the scope of the work of this department. The Veterinary Department has greatly extended its investigations with regard to contagious diseases, especially of tuberculosis among farm animals.

During the past year the Experiment Station has published and distributed the following bulletins:

No. 140.—Milking Machines.

No. 141.—Commercial Seeds of Brome-grass, and of English and Kentucky Blue-grasses: Adulterants and Substitutes and their Detection.

No. 142.—The Value of Oil Road Improvement.

No. 143.—Disposal of Dairy and Farm Sewage, and Water-supply.

No. 144.—Small Grain Crops.

No. 145.—Spraying.

No. 146.—Kansas Law Regulating the Sale of Concentrated Feeding Stuffs.

No. 147.—Indian Corn.

These bulletins were printed in editions of 25,000 to 30,000 each, and sent free to actual farmers, editors, and agricultural teachers in all parts of the State and beyond the State. A large number of press bulletins were also published.

The experimenting staff now consists of eighteen scientists located at this College and four located at Fort Hays Branch Station. An important step in the growth of the Station was the election of a director not directly connected with the Board of Instruction or with any of the departments. For many years Prof. J. T. Willard had done the work of this officer in addition to his own department work, but as the duties of the office increased from year to year it became necessary for him to decide which line he should drop. He resigned as director and the Board of Regents appointed Dr. Charles Wm. Burkett, of the South Carolina Experiment Station, who came here in the fall and took up the work where Professor Willard had left it. In June Doctor Burkett left for southern Europe to investigate the wheat varieties and methods of tilling of Hungaria and southern Russia.

J. D. WALTERS.

Commencement, 1907.

THE BACCALAUREATE SERMON.

The baccalaureate sermon was preached Sunday afternoon at the College Auditorium by Rev. S. S. Estey, D. D., pastor of the First Presbyterian church at Topeka. The Auditorium was crowded with a select audience, consisting of the graduating class, numbering 112 seniors and 4 candidates for the second degree, students, Faculty, and visitors, and all paid the closest attention to the eloquent discourse of the eminent divine.

Doctor Estey took for the text of his sermon the following passage from Romans 8:6: "For to be carnally minded is death, but to be spiritually minded is life and peace." The sermon was full of food for thought, and showed that right living and right principles, carried out through life, would win greater reward than temporal fame obtained by any doubtful means.

The music program was furnished by the College orchestra under the direction of Asst. Prof. R. H. Brown, and the College Choral Union under the direction of Prof. Olof Valley, and was of exceptionally high order.

THE SENIOR CLASS PLAY.

One of the most enjoyable features of Commencement week was the senior class play. The immense audience which gathered at the Auditorium Tuesday evening to hear the class play was delighted with the program, and were liberal in their applause.

The subject of the play was "A Crazy Idea." It abounded in funny situations and witty dialogues. Allen Philips, the nephew, deserves special mention for his good work in the play. Daniel Webster White, a colored gentleman of many accomplishments, was portrayed by Joe Montgomery, and he certainly made a hit. F. W. Grabendyke, a composer, was also one of the genuine humorists and fun-makers in the cast. Miss Florence Sweet, as Lillian Russell, a comic opera singer, pleased the audience with her singing. H. A. Ireland, as John Davis, from Manhattan, was great. He was enthusiastically applauded at every appearance. May Umberger, the popular class president, who took the part of Catharina, was exceptionally good, and showed real talent.

Credit is due to the class committee and to the director, Miss Elinor Lincoln, of Topeka, for their good work in the preparation and training for this annual class play.

Following is the complete cast of characters:

James Stone.....J. R. Garver
Beatrice, his young wife.....Margaret Cunningham
Eva, his daughter by his first wife.....Ethel McDonald
Tom Blane, his nephew, a student of medicine.....Allen Philips
Daniel Webster White, a colored gentleman of many accomplishments.....Joe Montgomery
Gustave Puders, a composer.....F. W. Grabendyke
Julius Button, who flees from creditors but is caught by a mother-in-law.....Fred Houser
Lillian Russell, a comic opera singer.....B. Florence Sweet
John Davis, from Manhattan.....H. A. Ireland
Catharina, his wife.....May Umberger
Augusta, their daughter.....Ellen J. Hanson
Samuel Hicks, Stone's friend from the rural districts.....Dexter Holloway
Neil Browning, Eva's suitor.....C. G. Nevins
Mrs. Miller, a widow.....May Griffing
Hill, a shoemaker.....R. E. Williams
William } Servants..... { E. L. Adams
Dora } { Ethel Berry
Anna, Lillian's maid.....Grace Streeter
A constable.....F. R. Lindsey

ALUMNI RECEPTION.

The alumni meeting of the Kansas State Agricultural College is understood to be a triennial. As this was an "off year" the program for the Commencement reception was not a formal one. There were, nevertheless, a large number of alumni present, probably over two hundred fifty.

The yearly alumni reception was attended by a large number, and was held in the Gymnasium Wednesday evening. It was in charge of President Breese and some of the older alumni members. No regular program, but numerous songs, a recitation by Miss Marcia Turner, class yells, etc., filled the hours. Ice-cream and cake was served on tables in an adjoining room.

At the regular business meeting, Prof. J. T. Willard was elected president of the Alumni Association for the coming year. Miss Sarah Hougham, editor of the *Jayhawker*, was made secretary.

COMMENCEMENT DAY.

Never before in the history of the College were such great crowds assembled as were here on Thursday. The Auditorium was packed with people to hear the address of Professor Hamilton and to see the diplomas awarded, and a greater number made efforts to get inside. It is estimated that fully seven thousand people were on the campus in the afternoon, and most of these had come to stay the whole day.

The exercises commenced at ten o'clock with a selection by the College Orchestra, after which President Nichols introduced the speaker, Prof. John Hamilton, Farmers' Institute Specialist of

the Department of Agriculture, Washington, D. C. The professor complimented the College on its large and fine looking graduating class, the many substantial buildings, the beautiful campus, the standing and recognition of the institution among the agricultural colleges of the country, and the liberal legislative appropriations which it had received last winter. He also congratulated the graduates for living in the twentieth century instead of fifty years ago, when Latin and Greek were supposed to educate a man for his life work. He expressed the hope that the future college would do still more for its students, and read a newspaper extract entitled "College Education has no Commercial Value," which statement he emphatically denied. The farmer, he said, forms the chief renewing element of the life of the Nation, but as an individual he must have education to fulfil this mission. He must have an education in order to make a good citizen and in order to hold his own financially. He pronounced farming a good business —a well-paying business—and said that farmers, though they grumble much, would not trade with any other class. The wealth of the Nation consists chiefly in its farms, and the exports of America consist chiefly in agricultural products. Of these facts there is no doubt—statistics can prove them.

There is another question, however, which should be answered: the question, Is agriculture a good business for a young man? In the past educated men often failed on the farm. Hundreds of professionists tried farming and ended with financial ruin because the "old education" was poor training for this business. It is not so now. Farming has changed its character. It is not all drudgery and economy, now; it is knowledge and science mixed with work and enterprise. Education, too, has changed. It is more practical now. The two have come closer together and have met each other. Higher education is no longer classical. The last twenty-five years have transformed the curriculum of the American College. The land-grant institutions founded by act of Congress in 1862 took the lead in this revolution, and the older universities had to follow. The up-to-date farmer, more than any other business man, is in constant contact with the professional scientific experiments, and what is true of the United States is true of Canada and the countries of central and northern Europe.

The governments foster this attitude of the modern farmer. They employ the best talent that can be found for the purpose of assisting agriculture with positive statistics and practical scientific deductions. Farmers' institutes are being held in every state to give practical information to the tillers of the soil. Twenty-one

states sent out institute trains last winter, and Kansas is one of the most energetic in this work. The schools, railroads and government offices of America need to-day 40,000 scientifically trained college graduates.

The agricultural schools have greatly increased the productiveness of the American farms. Wherever a college graduate has settled on a farm he has become a kind of a missionary among the neighborhood. Education is the cause of increased crops. Of fifty farmers in a certain township, twenty-five read agricultural papers and twenty-five did not. The result was that the former made a net annual profit of $17 per cow while the latter made but sixty-six cents.

Professor Hamilton also spoke of irrigation and the need of men who could handle this great problem of the West. He spoke in glowing terms of the present achievements in this direction and the almost unlimited possibilities of the future. He spoke of the work of reclaiming the worn-out farms of the East and the necessity of doing this work by educated men—a new and superior race of college-trained farmers like those composing the class of '07.

CONFERRING OF DEGREES.

After a grand chorus by the College Choral Union, under the direction of Professor Valley, President Nichols rose and addressed the graduating class. He said that he expected every one to go out into the world and do his duty as a citizen, business man and neighbor so that the Alma Mater might be proud of him and the State would feel that the College had fulfilled its mission. The 112 graduates then marched in procession past the president and received the "sheepskin."

GRADUATES AND THESES.

The class numbered 112 members, of whom 27 graduated from the course in agriculture, 19 from the course in electrical engineering, 13 from the course in mechanical engineering, 3 from the course in architecture, 11 from the general science course, 32 from the course in domestic science, and 7 from the course in veterinary science. Seventy-five members of the class were men and thirty-seven were women. All received the degree of Bachelor of Science except the seven veterinary graduates, who were made Doctors of Veterinary Medicine.

The President then conferred the degree of Master of Science upon four graduates who had completed the required course of two years.

Following are the names of the graduates and post-graduates of '07, together with the subjects of the prepared theses:

Ernest L. Adams,
Fertilizer Requirement for Unproductive Soils.

Lizzie Bea Alexander,
Problems of Bread Making.

Cecile Allentharp,
A Translation into Modern Prose of Chaucer's "Knight's Tale."

Alfred Henry Baird,
Apple Growing.

Charles Earle Bassler,
Anatomy of the Digestive Tract of Chickens.

Julia Susanna Bayles,
A Modern Farm House.

Ethel Esther Berry,
Outline for a Series of Demonstration Lectures.

Clare Biddison,
The History of Music.

Roy C. Bowman,
Tests on Concrete Building Blocks.

Henry W. Brinkman,
City Library Building.

Fred Wallace Caldwell,
Blood Count as a Means of Diagnosing Disease.

Albert Francis Cassell,
Therapeutics of Piloearpine.

Robert Archer Cassell,
Efficiency Test on Stowe Variable Speed Motor.

James Hamilton Cheney,
Urinalysis as a Means of Diagnosis in Veterinary Practice.

Roy H. Clark,
Underground Telephone Cables.

Lee S. Clarke,
History and Development of the Plow and Reaper.

Amy Cole,
A Digest of the Laws of the 57th Congress, 1901-1903.

Hermon H. Conwell,
Efficiency Test of a 3-Phase, Engine Type, Westinghouse Alternator, Junction City, Kansas.

(Mrs.) Ida E. Cook,
Beautifying a Country Home.

Jerome Earl Cooley,
Design of a Hydro-Electric Power Plant to Utilize the Blue River Waterpower at Rockyford.

Allan Elizabeth Cooper,
Michael Angelo.

Alson J. Cowles,
Efficiency Test of General Electric Variable Speed Induction Motor. Form M.

Edgar Andrew Cowles,
Tests to Determine Distribution of Power in Shops of the Mechanical Engineering Department.

Ethel Cowles,
Garden Plans.

James R. Coxen,
Test of Street Railway Motors.

Everet William Cudney,
The Management of Soils to Conserve Moisture.

Margaret Ruth Cunningham,
Cookery of Cheap Cuts of Meat.

William L. Davis,
The Percheron Horse.

Alexander H. Denneler,
Tests on Concrete Building Blocks.

Marshal Elsas,
Design of a Hydro-Electric Power Plant to Utilize the Blue River Waterpower at Rockyford.

Lois Failyer,
Education of the Mind and Body from the Physical Standpoint.

Stella Finlayson,
Problems in Bread Making.

Anna Helen Foster,
Domestic Science in Public Schools.

Mamie C. Frey,
Parasitism among Insects.

Walter Byron Gernert,
Winter Wheat in Kansas.

Clyde Jamison Gore,
The Comparative Value of the Horse and Mule, and of the Market Condition.

Frank W. Grabendike,
The Consolidated System of Electric Car Lighting.

May Lucetta Griffing,
The New South.

Herbert Revere Groome,
Therapeutics of Eserine.

Samuel P. Haan,
Design of a Telephone Central Station.

Ellen J. Hanson,
A College Girl's Dietary Experiment.

A. Dexter Holloway,
Practical Problems in Cold Storage.

Fred Houser,
Adaptability of Certain Forestry Species as Shown by Hardiness and Rate of Growth.

Harvey B. Hubbard,
The Design of a 200 K. W. Power Plant.

Flora May Hull,
Cookery of Cheap Cuts of Meat.

Kate May Hutchinson,
Hospital Dietaries.

Irene Ingraham,
Reconstruction, 1861-1876.

Harry A. Ireland,
The Making of a Grand Champion Steer.

Louis M. Jorgenson,
Test of Street Car Motors.

Miner M. Justin,
Land Nationalization.

Clara Myrtle Kahl,
Improvement of a Country Home.

Grover Cleveland Kahl,
Efficiency Test of a 3-Phase, Engine Type, Westing-house Alternator, Junction City, Kansas.

Mary Kimball,
Fireless Cookery.

Edward Rudolph Kupper,
Tests on Re-inforced Concrete Beams and Culvert Sections.

Clarence Lambert,
Live Stock Markets.

Lorin Wendell Lawson,
Efficiency Test on Stowe Variable Speed D. C. Motor.

Adah Lewis,
Coloring Substances and Adulterations of Confectionery.

Gertrude Lill,
A Character Study.

Percy E. Lill,
The Economic Interpretation of History.

Fred R. Lindsey,
Efficiency Test of a 3-Phase, Engine Type, Westinghouse Alternator, Junction City, Kansas.

James A. Lupfer,
Efficiency Test on Stowe Variable Speed D. C. Motor.

Edward Louis McClaskey,
Tests on Re-inforced Concrete Beams and Culvert Sections.

Edwin William McCrone,
Relational Anatomy of the Respiratory and Digestive Tracts of Chickens.

Ethel McDonald,
Immigration.

Carl E. Mallon,
Test of Street Railway Motors.

Ella M. Meyer,
Colonial Government.

Atsushi Miyawaki,
Hydrogen Peroxide as a Preservative of Milk.

Joseph Shaw Montgomery,
Dips and Their Uses.

Leona Estel Moore,
The Government and the Indians.

Clarence G. Nevins,
Critical Analysis of the Interstate Commerce Law.

Bessie Minerva Nicolet,
History of Pianoforte Music and Composers.

Amer B. Nystrom,
The Relation of Moisture, Acidity and Salt of Butter to its Keeping Qualities.

Ole J. Olsen,
The Christmas Lamb.

Harry Oman,
Dips and Their Uses.

Burton Sylvester Orr,
Tests to Determine Relative Values of Alcohol, Gasoline, and Kerosene as Fuels for Internal Combustion Engines.

Joseph W. Painter,
Forcing Lettuce.

Jesse Leroy Pelham,
Dry Land Arboriculture.

Allen G. Philips,
Conditions Affecting the Mortality of Chicks.

Harry E. Porter,
Proposed Plans and Specifications for a New Veterinary Science Building.

Adeline Poston,
Outlines for Domestic Science in Negro Schools.

George Percival Potter,
When to Feed and When to Sell a Bushel of Corn.

Charles A. Pyle,
Protargol in Veterinary Surgery.

Elizabeth Randle,
The Decoration of a Dining Room.

Lulu Mahala Rannells,
Fireless Cookery.

Hiram R. Reed,
The Economical Management of Farm Lands.

Edward C. Richards,
Tests to Determine Distribution of Power in Shops of the Mechanical Engineering Department.

James C. Richards,
Tests With Recording Traction Dynamometer to Determine Force Required to Pull Loads on Roads Having Different Grades and Surfaces.

Donald Ross,
Efficiency Test on Boiler and Engine of Flour Mill.

John Michael Ryan,
American Horse Breeding.

Edwin George Schafer,
Methods of Corn Breeding.

Walter T. Scholz,
Tests on Re-inforced Concrete Beams and Culvert Sections.

Martin William Schottler,
Design of a Telephone Central Station.

Earl Locke Shattuck,
Tests on Re-inforced Concrete Beams and Culvert Sections.

Wilson George Shelley,
Practical Methods of Plant Breeding.

Perle Harrison Skinner,
Magazine Hammer. (Drawings, Model and Specifications.)

Frank Sorgatz,
Tests With Recording Traction Dynamometer to Determine Force Required to Pull Loads on Roads Having Different Grades and Surfaces.

Maurice I. Stauffer,
Efficiency Test of a 3-Phase, Engine Type, Westinghouse Alternator, Junction City, Kansas.

Orin A. Stevens,
The Hardness of Wheat and Its Relation to the Moisture Content.

Claudius Stewart,
Efficiency Test of General Electric Variable Speed Induction Motor. Form M.

Grace Elizabeth Streeter,
Domestic Science in the Public Schools.

Lyman Bradley Streeter,
Soil Management.

Bertha Florence Sweet,
History of Music.

S. Ray Tilbury,
Tests to Determine Relative Values of Alcohol, Gasoline and Kerosene as Fuels for Internal Combustion Engines.

Anna Rhea Tolin,
The Relation of Diet to Certain Chronic Diseases.

Virginia Troutman,
Landscape Gardening.

May E. Umberger,
The Mind of Woman.

Josephine Elizabeth Walter,
Habit Transformation.

Merton Luther Walter,
Modern Farm Improvements.

Albert A. Werner,
Kansas Grape Growers' Problems.

Georgiana West,
The New South.

Helen Clara Westgate,
A Color Scheme for the Decoration of an Eight-Roomed House.

Robert E. Williams,
Fertilizer Requirement for Unproductive Soils.

GRADUATE.

Homer Derr,
The Effect of Surface Exposure in Determining Evaporation Rate.

Charles Wesley Melick,
Modification of Cows' Milk for Infants.

Leonard M. Peairs,
The Butterflies of Kansas.

Helen B. Thompson,
Fireless Cookery.

AFTERNOON PROGRAM.

In the afternoon the band concert, given by the College band under the direction of Asst. Prof. R. H. Brown, attracted the people. The Auditorium was filled, and thousands of people listened from the outside.

The military drill in front of Anderson Hall at three o'clock, under the direction of Captain Shaffer, delighted the audience. The sham battle that followed had much the appearance of real warfare. This was Captain Shaffer's last meeting with the cadets, as he will depart with his regiment for the Philippines this sum-

mer. The captain has done a great work for them, and they appreciate it highly. As a token of appreciation the cadets presented him with a very valuable wrist watch, such as is worn by army officers.

Up to the middle of the afternoon the weather had been almost ideal. The roads were in fine condition and the air was cool and fresh, but gradually the cloudbank in the west began to thicken, and it became evident that the night would witness a storm. It arrived earlier than expected.

A big crowd that gathered at the ball grounds to see the closing game between the College and Haskell's Indians were disappointed. Only one-half inning had been played, in which the College shut out the Indians, when the rain commenced which drove everybody from the field to shelter, and made the grounds a lake of water. The game had to be postponed indefinitely.

ANNUAL RECEPTION.

The Commencement program closed with a reception given by President and Mrs. E. R. Nichols, at East Parkgate, Thursday evening, to the Board, the Faculty and their wives, and to many invited guests. In the receiving line were President and Mrs. Nichols, Senator Taylor, Judge and Mrs. Story, Regent and Mrs. Griffith, Ex-Regent and Mrs. Berry, and Regents McDowell and Blackburn. Among the out-of-town guests were E. B. Cowgill, of the *Kansas Farmer*, Topeka, and Ex-Regent Geo. M. Munger, of Eureka.

J. D. WALTERS.

The Charles Silly Bequest.

F. L. Williams, trustee of the bequest made to the Agricultural College in 1899 by Charles Silly, of Agricola, Kan., was at the College last week to visit his son and confer with President Nichols about the status of the fund entrusted to his care. The President being absent he made the following statements to Professor Walters, promising that a written annual report (No. 8) of his transactions would follow in a short time:

"The property constituting the fund for Kansas State Agricultural College boys consists of 240 acres of improved land, in Franklin and Coffey counties, Kan., and some accumulated money, the income only being used by the boys. The present value of the bequest is between $15,000 and $20,000. During the first eight years of the life of the fund, sixty different boys used this money in amounts ranging from $10 to $130, the total amount received by the sixty being $2232.05, and the amount returned by them in cash $1301.36, and in addition to this they paid interest at

five per cent amounting to $143.39. The amounts received by the boys each year varied in proportion to the crops and the amount returned by the boys who repaid. The amount paid out each year to the boys is shown by the following table, the first item being for the year ending March 31, 1900.

First year	$169.14
Second year	250.00
Third year *	90.00
Fourth year	311.75
Fifth year	240.00
Sixth year	368.00
Seventh year	505.00
Eighth year	250.00

During the seventh year the amount returned by the boys exceeded the income from the original fund. Thirty-seven of the sixty boys have returned all their money, and six have returned part of it. Only five of the sixty boys have been careless about returning the loan received. The money is often spoken for from two to six months in advance of its being received by the trustee.

One Girl's Experience.

It was with interest that I read an article a few weeks ago on the domestic science short course at Kansas State Agricultural College, and I wish to tell about this course as one who has completed the work.

To the girl whose circumstances do not permit her to take a full college course, it is a fine opportunity. Manhattan is situated in a beautiful country, and it leaves a lasting inspiration to spend some time on College Hill, with all its fine buildings and their equipments. The short-course student has the same opportunity as the other students to use the library, to attend lectures, socials and the meetings of the Young Women's Christian Association, and of the literary societies. A special class in physical culture is organized for the girls taking this course.

During the second term one hour each day is spent in the study of physiology and hygiene, and lectures are given on home nursing. All this helps to make possible what was taught us there, that "every girl owes to the world a well woman."

During the first term drawing is taught. This teaches the eye to observe, and many valuable hints are given as to the proper and artistic furnishing of the home. The lessons given in floriculture and in horticulture acquaint one with plant life, and thereafter all plants and trees assume a new meaning.

At the College the student will come under the influence of the

*Payment made on new buildings this year.

fine personalities of several different teachers, as they study under at least seven during the course, and will become acquainted with many more. She has a chance to become acquainted with young people from all parts of the State and forms friendships which will last through life.

A girl will be saved many happy hours when she has the confidence in herself that comes from a thorough understanding of housekeeping and scientific and practical cookery, and when she knows how to make well-fitting garments for herself and others. When the country girl starts out on her morning work with the breakfast dishes and the milk buckets and the separator to wash, bread to mix, etc., it helps her to remember how pleasant she found the breadmaking when she saw the wonderful yeast germs growing under the microscope. One of the things we heard again and again was, "Young ladies, always have the room in perfect order before you leave it;" and one teacher taught us that we should try to simplify our work so as to have "time to feed the mind as well as the body."

When she thinks of all this, she works with too much energy for the work to be a drudgery.—*Amanda Christianson, Corning, Kan.*

The Kansas Feeding-Stuffs Law.

The correspondence of the Experiment Station has amply shown that the feeders of the State are in many cases being imposed upon in respect to the quality of the concentrated feeding stuffs sold them. The absence of any law providing for inspection of milled feeds has made our State an easy prey to unscrupulous manufacturers and dealers. Some feeders have realized this and have protected themselves in a measure by having cottonseed-meal, oil-meal, etc., analyzed at their own expense. Such analyses have shown almost invariably that the feed was not up to the standard claimed by the seller. With a view to protecting feeders of stock and honest dealers, the Station authorities secured the introduction of a concentrated feeding-stuffs law at the recent session of the legislature. This was modified in several important particulars and passed, and will be in full effect the first of next July. The law in full follows, and it is hoped that it will be carefully studied by farmers, millers and dealers in order that its simple provisions may be understood and acted upon. The law does not require as complete a statement concerning the composition of feeding stuffs as some other states, but the points included are sufficient to safeguard the public. No extended argument will

be entered into at this time as it is believed that the provisions of the law will justify themselves to all thinking readers.

An Act regulating the sale of concentrated feeding stuffs, forbidding their adulteration, providing for their inspection and analysis, providing penalties for its violation and repealing all acts or parts of acts in conflict with it.

Be it enacted by the Legislature of the State of Kansas:

SECTION 1. For the purposes of this act concentrated feeding stuffs are declared to be all materials sold, offered for sale or held for sale within the State of Kansas and designed for the nutrition of animals of any species, if such materials have been subjected to any grinding, milling or mixing process, or to any process whereby the composition of the original material is altered. Condimental feeds are hereby expressly designated as coming under the provisions of this act, and all forms of animal life except man are included under the term "animals." The term "brand" as used in this act is to be taken to mean, first, the name, trademark, or other designation under which a concentrated feeding stuff is sold, and second, the feeding stuff itself.

SEC. 2. Every brand of concentrated feeding stuff offered or held for sale or sold within the State of Kansas shall be registered in the office of the director of the Agricultural Experiment Station of the Kansas State Agricultural College, and each sale of any concentrated feeding stuff not so registered shall constitute a separate violation of this act. The manufacturer or seller of any concentrated feeding stuff shall apply to the said director of the Experiment Station for registration and analysis of the feeding stuff, and in his application for such registration and analysis he shall submit a statement of the several ingredients used in preparing the concentrated feeding stuff, and the sources from which they are obtained, which information shall be filed for reference, but shall not be disclosed by the said director if none of the ingredients are unwholesome, deleterious or fraudulent. If the feeding stuff, as described by the manufacturer or seller, is found to consist of wholesome materials, and the name or brand used to designate it is not false or misleading, the said director of the experiment station shall register the name, brand or other designation of the concentrated feeding stuff, its guaranteed composition in the terms stated in this section, and the name and address of the manufacturer or seller applying for the registration. Such registration shall be made annually, and the manufacturer or seller shall pay a registration fee of ten dollars for each brand of concentrated feeding stuff registered; provided, that any manufacturer of condimental or medicinal stock foods shall pay a registration fee of fifty dollars for each brand selling for more than forty dollars per ton.

SEC. 3. Whenever requested by the said director of the Experiment Station it shall be the duty of the manufacturer or seller who secured registration of a brand of concentrated feeding stuff to furnish said director a true and complete list of the names and places of business of all dealers in said brand of concentrated feeding stuff who purchase it of the said manufacturer or seller, and reside within the State of Kansas. Failure to furnish such list shall be sufficient ground for revocation of the registration of said concentrated feeding stuff.

SEC. 4. Every sack, box, carton or other package of concentrated feeding stuff offered or held for sale or sold within the State of Kansas shall

bear a distinctly printed and conspicuous label in the English language which shall state the name and address of the manufacturer or seller, the registered name, trademark or other designation of the concentrated feeding stuff, the net weight of the package, and the guaranteed percentage of fat and of protein.

SEC. 5. An inspection tax shall be collected upon all concentrated feeding stuffs, imported into the State of Kansas, that is sold, offered for sale or held for sale within the State of Kansas, which tax shall be at the rate of twenty-five cents per ton, except as hereinafter stated. Every sack, box, carton or other package of concentrated feeding stuff, imported into the State of Kansas, that is sold, offered for sale, held for sale, or in the possession of any one within the State of Kansas, shall bear at least one tag certifying that the tax aforesaid has been paid on one hundred pounds or a fraction thereof. If any package contains more than one hundred pounds it shall bear one tag for each one hundred pounds or fraction thereof, and in case the concentrated feeding stuff is sold in bulk one tag shall be delivered with each one hundred pounds or fraction thereof. All tags required under the provisions of this section shall be obtained from the aforesaid director of the Experiment Station in lots of four hundred or multiples thereof, and he shall receive from the manufacturer or seller five dollars for each four hundred so furnished. Such tags shall be good until used, but counterfeiting them or using them more than once is prohibited. The tax so collected, together with all registration fees collected, shall be used so far as may be necessary in defraying expenses of inspection and analysis of concentrated feeding stuffs, as hereinafter provided, and if any residue remains it shall be turned into the general funds of the Experiment Station aforesaid.

SEC. 6. In so far as the revenues provided by this act or otherwise may suffice, it shall be the duty of the chemist of the Experiment Station aforesaid to make, or cause to be made, such inspection and analysis of concentrated feeding stuffs as in his judgment may be deemed necessary to ascertain whether or not manufacturers and others are complying with all the provisions of this act. Toward this end he or his authorized deputies shall procure annually at least one sample of each brand of concentrated feeding stuff registered for sale within the State of Kansas, and shall make or cause to be made an analysis of the same according to the methods of the association of official agricultural chemists, and a certified statement of the results of such analysis shall be final evidence in any legal action within the State of Kansas, concerning such concentrated feeding stuff.

SEC. 7. In sampling concentrated feeding stuffs in lots of ten or less packages, portions shall be taken from each package; in lots of more than ten packages and not more than five tons, samples shall be taken from not less than ten packages and from not less than ten per cent of the packages; in lots of over five tons, portions shall be taken from not less than twenty packages. In sampling concentrated feeding stuffs in bulk, not less than ten portions shall be drawn, and these from various parts so as to represent fairly the whole. The portions drawn shall be carefully mixed and from the mixture two samples of about two pounds each reserved and placed in sealed bottles or jars, and accurately labeled. One of these samples shall be delivered to the owner of the concentrated feeding stuff, or his representative, the other taken for the use of the chemist of the Experiment Station. Sampling shall be during ordinary business hours and the owner of the concen-

trated feeding stuff or his representative may be present, but any refusal by such owner or his representative to permit sampling shall be taken as sufficient evidence of violation of this law by him.

SEC. 8. Any manufacturer, seller or holder of concentrated feeding stuffs who shall fail to comply with all the provisions of this act, or who shall sell, offer for sale or hold for sale any concentrated feeding stuffs the composition of which is not in accordance with that guaranteed, upon conviction shall be deemed guilty of a misdemeanor and fined not less than fifty dollars nor more than two hundred dollars, and costs of the first offense, and not less than one hundred dollars, nor more than five hundred dollars and costs for each subsequent offense; provided that any seller shall be exempt from the penalty for sale of concentrated feeding stuffs that are below the guaranteed standard if he has a written guarantee from the manufacturer or seller of the concentrated feeding stuff that said feeding stuff is registered and of the guaranteed composition, if said manufacturer or seller is a resident of the State of Kansas. Suit may be brought for the recovery of penalties under the provisions of this act in the district court of the county where the offense is alleged to have been committed, and shall be prosecuted by the county attorney in the name of the State of Kansas, upon complaint of the said director of the Experiment Station or of some reputable citizen of the county. Each sale shall constitute a separate offense. Penalties recovered under this act shall be turned into the school fund of the county wherein the offense was committed. In cases involving the composition of the concentrated feeding stuff a deficiency not greater than one-fifteenth of the guaranteed percentage of any ingredient shall not be taken as evidence of fraudulent intent, but the seller of any concentrated feeding stuff that does possess the composition guaranteed shall be liable for damages resulting to the user in consequence thereof.

Sec. 9. The Experiment Station aforesaid shall publish at least annually a bulletin giving a list of the concentrated feeding stuffs registered for sale in this State with their guaranteed composition, and such other information as may be deemed valuable to the public concerning them and their use. This bulletin shall also contain a list of the manufacturers and sellers of concentrated feeding stuffs in this State according to the statements secured under the provisions of section 3.

Sec. 10. The adulteration of any concentrated feeding stuff by the addition of foreign mineral matter, or by the addition of foreign animal or vegetable matter of little or no nutritive value, and the use or addition of substances poisonous or deleterious to animals is forbidden. This section shall not be so construed as to prevent the compounding and sale of balanced feeds or condiments, the composition of which has been duly declared and approved in accordance with the provisions of section 2.

SEC. 11. The provisions of this act shall not apply to goods sold by one manufacturer to another, nor to feed ground or mixed by the consumer of the same.

SEC. 12. All acts and parts of acts in conflict with this act are hereby repealed.

SEC. 13. This act shall go into effect on the first day of July, 1907, after its publication in the statute-book.

The law as enacted differs somewhat in its provisions from that of any other state. By including all feeds that have been sub-

jected to any milling or grinding process, such staple feeds as bran, shorts and corn-chop are brought within its scope. The laws of some other states do not require those feeds to be registered. That is, however, a weakness which our law avoids. Any feed that is in a ground or mixed condition is one which the user can not judge by his ordinary experience. So common a feed as corn-chop is often adulterated with the bran obtained in making corn-meal. Shorts are reported to be adulterated with inferior materials also, and an immense establishment is in existence, or was a few years ago, the business of which was the grinding of corn-cobs for the purpose of adulterating bran. Corn bran is frequently mixed with wheat bran.

Protection of the consumer, therefore, requires that these feeds be subject to inspection and that manufacturers of them be required to guarantee their quality. The registration fees provided by these feeds will supply funds necessary to meet the expense of inspection required on their account.

It will be noted that the law is especially directed toward condimental feeds or medicinal stock foods. These goods are sold at a high price, and the legislature designated a correspondingly high registration fee for them. The application of the law in respect to these feeds may prove to be somewhat difficult as the line between condition powders and condimental feeds is not very sharply drawn in respect to composition. The Experiment Station will hold in respect to such materials that goods advertized and recommended for continuous or regular use with the customary feed of animals in the ordinary degree of health are condimental feeds or medicinal stock foods within the meaning of the law, while those designed for the treatment of diseased animals and not for continuous or regular use are not within its scope and application.

The law makes a distinction between feeds manufactured in the State and those brought in from outside, and requires that the latter shall, in addition to the registration fee, pay an inspection tax of 25 cents per ton, but articles sold in packages shall have at least one tax tag representing the payment of one and one-fourth cents attached to each package, and if the package weighs over 100 pounds there must be one tag for each 100 pounds or fraction thereof. In exercising its police power in supervising the sale of concentrated feeding stuffs the law recognizes a greater difficulty in dealing with manufacturers outside the State, and places this additional charge upon them.

J. T. WILLARD.

THE INDUSTRIALIST

Published weekly during the College year by the Printing Department of the

Kansas State Agricultural College

Manhattan, Kansas.

PRES. E. R. NICHOLS.....Editor-in-Chief
PROF. J. D. WALTERS.....Local Editor
PROF. J. T. WILLARD.....Alumni Editor

Local Notes.

Miss Barbour will spend the summer vacation at Minneapolis, Minn.

Professor Erf returned Monday from a business trip to Stillwater, Okla.

Professor Cortelyou and family will spend the summer vacation at Fairmount, Neb., with Mrs. Cortelyou's parents.

The *Kansas Farmer*, in its number of June 27, publishes an extensive and well-illustrated write-up of the College Commencement.

Regent A. M. Story and Prof. R. J. Kinzer, of the Kansas State Agricultural College, went to Missouri last week and purchased six head of fine Shorthorn cattle for the College breeding herd.

A genuine Dago, with a "lame" organ and a "collecting" monkey, enlivened the campus one morning last week. He—that is, the monkey—gathered a rich harvest of coppers till janitor Lewis interfered with the trio.

Director R. H. Forbes, of the Arizona Experiment Station, spent several days this week visiting the College and Station. He notes a wonderful growth since his visit eight years ago, and expressed himself as under obligation to this institution for many valuable ideas that have been utilized in his work.

At the meeting of the Manhattan Commercial Club Tuesday evening the following directors were elected: Pres. E. R. Nichols, Prof. E. B. McCormick, C. M. Breese, J. Q. A. Shelden, J. B. Floersch, Wm. Reed, S. M. Fox, E. A. Wharton, W. W. Ramey, C. G. Anderson, H. L. Willard, Roy Eakin, O. D. Shide, J. G. Perry, A. P. Fielding.

Miss Lucile M. Brown, a sister of Prof. R. H. Brown, of the Agricultural College, is making a fine record as a pianist and as a soloist at Hyde Park, Mass. In a recent issue of the *Boston Herald*, in the position of prominence on the society page, is given a two-column picture of Miss Brown, together with a very complimentary paragraph.—*Mercury.*

One day last week Professor Kammeyer was surprised to receive a somewhat bulky envelope. Upon opening it he found that it contained a card from the Alpha Beta Literary Society, thanking him for his efforts in training them for their annual play. The "bulk" explained itself very readily. It consisted of a "wad" of crisp greenbacks to the amount of $75, which were wrapped about the card.

There will be a picnic excursion to this College from Shawnee county on July 17. The excursion will be under the management of Indian Creek Grange. The excursionists will arrive on a special train at about 10 A. M. and return leaving at 6 P. M.

Six or more people are constantly employed at present in preparing and analyzing feeding stuffs sent to the Chemical Department under the provisions of the new feeding stuffs law which goes into effect July 1. This work will probably continue most of the summer.

Manhattan is growing. The report of the city assessor shows an increase of population of 408 during the past year. This does not include the students, nor does it include the fifty or sixty families that live west and north of the city, adjoining the College farm. The population reported for March 1 is 4664. If the suburbs are added it is considerably above 5000, exclusive of the students.

The new State dairy commissioner, J. C. Kendall, arrived at Manhattan in time to witness the closing exercises of Commencement week. Commissioner Kendall will be busy for some days in opening up his new office at the College and in preparing for his official duties, which begin on July 1. The commissioner is a young man of ability and energy who comes to Kansas with the prestige of good work well done.

Sales of the Coöperative bookstore for year ending June 1 amounted to $8069.58. The invoice shows a gain of $735 over last year. The dining-hall has gained about $200. Shares of this association are held by students and become void when they leave College. The stockholders receive a discount of five per cent on every article bought at the store, and the surplus is cumulative. The association has now bought a lot at the southeast corner of the campus and intends to erect a commodious store building.

Supt. and Mrs. J. D. Rickman will leave in a few days for the Jamestown exposition. They will go by way of Chicago, up through Canada, will visit the Niagara Falls, then to Wilkes-Barre, Pa., to visit their son Clyde and family. From here they go to New York, where they will take an ocean liner to Norfolk, Va., and "take in" the exposition, Old Point Comfort, and numerous other historic places. Washington, D. C., will be visited, from which place they will return home by way of the South. They expect to be gone about four or five weeks.

Saturday evening, June 15, 1907, will be long remembered by the baseball team as the occasion of an unheard-of combination, namely, a square meal unlimited in quantity, perfect in quality, faultlessly served, and with no speeches. This remarkable event took place in Kedzie Hall, and the banquet was prepared and served by the senior girls of the domestic science course. In addition to the team, some members of the College Faculty, more or less identified with the Athletic Association, and a few guests from the city were present, in all about thirty.

Prof. J. D. Walters, head of the Architecture Department of the Kansas State Agricultural College, celebrates his thirty-first Commencement as a professor there. He has given special instruction to 20,000 students, and he says he has climbed College Hill 30,000 times, walking a distance equal to almost around the earth. He feels as good as ever and was recently elected alderman from his ward.—*Kansas Farmer.*

In the list of seniors on page 247 of the senior class book the names of several seniors in good standing are left out, while on page 21 the picture of Supt. Antonetta Becker, of the Department of Domestic Art, is labeled Rose. Being an old art critic the local editor wishes to say that the "Rose" would be correct enough if it were placed between quotation marks or in parentheses. We notice also that the names of President Nichols and Assistant Meinzer are misspelled and that the degree and alma mater of several of the assistants are given wrong. However, these discrepancies are mostly the fault of the firm who printed the book.

The Farmers' Institute and College Extension Department of the Kansas State Agricultural College reports as follows for the past College year: Institutes, 135; attendance, 20,200. Dairy and wheat trains, 3; attendance, 11,160. Alfalfa train, 1; attendance, 5760. Chautauquas, picnics, and other general meetings attended, 18, by 14 College speakers. Teachers' associations and institutes attended 34, by 5 College speakers. Boys' corn contest, 2800, with 16 counties yet to report. Total attendance for all meetings (not counting teachers' meetings), 40,585. Total expense for the year, less than $3900.

Engineer J. Lund, of the Heat and Power Department, has nearly completed the additional well for the new College pumping station. It is located about two hundred feet north of the present station. The well is seven feet in diameter and is cased with a most solid wall consisting of hard-burned brick and cement mortar. The well is at present about forty feet deep, but it will be sunk to the stone ledge, which he expects to meet at a depth of nearly sixty feet. The quantity of water required by the College is constantly increasing, and both wells will be required to furnish the necessary amount.

Senior Student P. H. Skinner, of the architecture course, presented a thesis describing a magazine lath hammer of his own invention. The thesis was accompanied by a working model—one that actually worked. He makes the following claim for his invention: "By the present method of lathing, an ordinary lather will put on somewhere in the neighborhood of 375 square yards per day. He gets about three-fourths cents per square yard. This is equivalent to $2.81 per day. By the use of the 'Ideal Hammer' any man can easily nail on 1875 yards of lath per day. At the price quoted above, this is equivalent to $14.05. Thus by the use of the 'Ideal Hammer' one man can do the work of five with the ordinary hatchet. Besides, it does away with the bad practice of using the mouth as a nail rack."

The Athletic Association met Saturday before Commencement for the purpose of electing student managers and transacting other business. The report of the treasurer, Prof. J. V. Cortelyou, showed that the receipts for the year were: Football, $248.97; basket-ball, $624.80; track, $5.25; baseball, $2,905 85; miscellaneous, $222.50; grand total, $4,007.37. The expenditures were: Football, $45.98; basket-ball, $586.97; track, $215.72; baseball, $1801.85; miscellaneous, $376.66; total, $3,027.18; cash on hand, $980.19. Following the reading of the treasurer's report, Manager Dean told of the work, past and future, of the different teams. Student managers were elected as follows: Baseball, S. W. Cunningham; basket-ball, Elmer Bull; tennis, Ira Wilson; track, H. A. McLenon.

The Board of Regents held their annual Commencement session at the College from June 19 to 25. All members were present except Regent Tulloss, who was prevented from coming up on account of the death of an uncle. A large amount of routine business was transacted. Contract for the erection of the new Domestic Science Hall was awarded to Stingley Bros., of Manhattan, for the sum of $69,500. The building was definitely located and Professor Walters was appointed superintendent of its construction. Contract for cadet uniforms for next year was awarded to John Coons, of Manhattan, his bid being the lowest of the five in the hands of the Secretary. Several salary adjustments were made and a number of the old professors were given a substantial increase. The resignations of Prof. E. A. Popenoe, Assistants M. D. Snodgrass, Cecilia Augspurger, and Edetha Washburn and Librarian Margaret Minis were accepted and arrangements were made to fill the resulting vacancies. Appropriations for the different departments for the coming year were discussed and voted and a number of short leaves of absence were granted.

Alumni and Former Students.

E. C. Farrar, junior last year, has been elected principal of the Marysville schools.

Helen B. Thompson, '03, and Leonard M. Peairs, '05, received the degree of Master of Science from this institution at this Commencement.

Alice Melton, '98, is taking a long needed vacation, and is spending it visiting relatives in Canada and Michigan. She left last Sunday and will be gone about a month.

F. W. Wilson, '05, professor of animal husbandry in the experiment station, University of Arizona, at Phoenix, Arizona, took his vacation in time to spend Commencement here.

J. L. Pelham, '07, went down to Missouri about June 14 to take unto himself a bride, whose name we have not learned. He brought her back to "show her" the College at Commencement time.

C. F. Kinman, '04, spent Commencement at the College. He has recently been elected assistant horticulturist of the experiment station at Santiago de las Vegas, Cuba. He will take up his work there August 1.

Prof. G. H. Failyer, who was long at the head of the Chemical Department and is now in the Bureau of Soils, Washington, D. C., is taking his annual vacation, and came back home to see his daughter Lois graduate. He will be here about three weeks.

H. G. Maxwell, '06, has completed a year of very satisfactory service as dairyman at the Tuskegee Institute and left early in June for Ohio State University, where he will take a course in veterinary medicine and surgery. His address at present is 926 Denison Avenue, Columbus, Ohio.

Miss Margaret Haggart ['05], a graduate of the Domestic Science Department of K. S. A. C., and for the past year head of the department of domestic science in the Agricultural College of New Mexico, has been engaged to give lectures and demonstrations at the Topeka Chautauqua.—*Enterprise.*

Homer Derr, '00, received the degree of Master of Science Commencement day. With Mrs. Derr, (Elizabeth Asbury, '00), he spent several days visiting in the city. He will return to Mt. Pleasant, Michigan, next year, where he is teaching physics in the Central State Normal School, and the appreciation of his work has been shown by an increase in salary.

Margaret Haggart, '05, was among the Commencement visitors. She has spent a pleasant year as professor of domestic science in the New Mexico Agricultural College, to which she will return next year. She has been making some special investigations of the possibilities of cactus fruit and has found the subject very interesting. This work is in coöperation with Dr. David Griffith, of the Bureau of Plant Industry.

The reunion of the alumni took place in the Woman's Gymnasium. It was entirely informal, light refreshments being served. Every one seemed to have a jolly time. All of the arrangements for the occasion were made by the Manhattan Alumni Association. It is impossible to give a complete list of the alumni who were present at that time or Commencement week. Their number is getting too great for such accounting.

The graduates of the College residing in southern California have formed an alumni association. It was organized the evening of May 30, at the home of Doctor Royer, in Los Angeles. The officers elected were: President, Mrs. Eliza Stringfield, '73, 1111 Santee street, Los Angeles; vice-president, Dr. B. F. Royer, '95, 1027 Sunset Boulevard, Los Angeles; secretary, Ella Criss, '04, Anaheim; treasurer, Mary Hall, '04, 222 Brook street, Los Angeles. The next meeting is to be a picnic at Eastlake Park, in Los Angeles, on July 15, to which all alumni and former students are invited.

W. H. Spencer, '02, Yates Center, Kan., reports himself as prospering in a very satisfactory manner in his farming and stock-raising operations. This Commencement marks his first visit since graduation. He looks as natural as when he used to sprint across the gridiron.

We are in receipt of a small pamphlet consisting of a presidential address given by D. W. Working, '88, before the Arapahoe County (Col.) Teachers' Association, on "James Russell Lowell as a Teacher." The address is a forceful one, and presents the poet from an unusual point of view. Mr. Working received the degree of Master of Arts from the University of Denver on the 12th inst. He is the principal of Petersburg school, District No. 22, Arapahoe county.

Miss Emma Cain, who graduated from the College in 1902, was married in Clay Center, June 10, to Dr. Albert Weiss, of Sabetha. Immediately after the wedding Doctor and Mrs. Weiss left for a short visit in Sabetha and Kansas City before going to their home in Virginia, Gage county, Neb., where the groom will study medicine. Doctor Weiss is a graduate of the Kansas University and of the Kansas City Medical College. The bride, after graduating from the K. S. A. C., taught school in Riley county for some time, and in this capacity made many friends who wish her well.—*Enterprise.*

A wedding of much interest to Manhattan people, and one that came as a surprise even to the bride's parents, was that of Miss Grace Apitz and Mr. W. Harry Imes, which occurred Tuesday in Kansas City. Mrs. Imes is a daughter of Mr. and Mrs. E. P. Apitz, of this city, and is very popular in Manhattan's social circle. She is a quiet, unassuming young lady, liked and admired by all who know her. Mr. Imes is also well known here, having graduated from the State Agricultural College last year. He now has a position as traveling salesman for an automobile house at Joplin, Mo. Mr. and Mrs. Imes will make their home in Topeka.—*Enterprise.*

The horticultural department of the Massachusetts Agricultural College, Amherst, Mass., has undergone a reorganization and is now known as the Division of Horticulture. Prof. Frank A. Waugh, '91, is the head of the division and is professor of general horticulture and landscape gardening. The several departments of the division are under his general charge. The department of pomology will be in the care of Prof. F. C. Sears, '92, so long the efficient professor of horticulture in the Nova Scotia Agricultural College. Professor Sears declined a raise of five hundred dollars in his salary at the Provincial institution in order to take this new position. The details of the organization of the Division of Horticulture can not be entered into here, but they are such as to insure its most efficient administration, and the entire arrangement is a credit to Professor Waugh's organizing ability, and an indication of the confidence reposed in him by the college authorities.

H. N. Whitford, '90, has just arrived from Manila, after a service of three and one-half years there. He expects to go back in October. He is forester and chief of the division of forest products. The work of his division is partly that of exploration, and mapping the forest resources of the Philippines, at the same time studying the botany of the country from the scientific point of view. The administration of the forests of the islands is designed to provide the natives with timber which they need, and supply the domestic and foreign markets, at the same time preserving them from destruction that they may be a permanent resource of the country.

The Bloomington, Ill., *Daily Pantagraph* contains the following notice concerning Margaret Myrtle Mather, '02: "Miss Margaret Mather, the well-known teacher of domestic science in this section of the state, is to be married to Mr. Theodore P. Romine, of Mooresville, Ind., on June 15. The ceremony will take place at the own home of the young people, which the groom has already furnished at Mooresville. The news of her approaching marriage is of much interest to the many friends of Miss Mather in Bloomington and Normal, and many other places in central Illinois. She is now at Lincoln, where she has been in charge of the domestic science department of Lincoln College for the past two years. Prior to that time she was teacher of domestic science at the Soldiers' Orphans' Home in Normal. She has also conducted lectureships in Chautauquas at many places in Illinois, Kentucky, Indiana, and Wisconsin. The groom is engaged in the fruit-growing business and owns a large farm near Mooresville, Ind."

At the business meeting of the Alumni Association Wednesday afternoon, June 19, the following officers were elected for the ensuing year: President, J. T. Willard, '83; vice-president, H. W. Avery, '91; secretary, Sarah Hougham, '03; treasurer, Roy A. Seaton, '04. The committee on memorial portraits reported that the fund contributed by subscribers is much too small for purchasing portraits of the three deceased ex-Presidents. The committee was continued and instructed to ascertain the preferences of donors in respect to their contributions in order that the funds subscribed may be apportioned toward the three portraits, respectively, in accordance with the preferences of the donors. After this is done contributions to each of the funds are to be solicited, and as soon as any one reaches the necessary amount the portrait is to be ordered. Should an excess be subscribed for any portrait it is to be disposed of in accordance with the best judgment of the committee. This action will enable friends of any one of the deceased ex-Presidents to make contributions with the assurance that their donations will go to secure the portrait or portraits in which they are most interested, instead of being merged in a lump sum to be divided among all three. This should stimulate generous rivalry among the friends of these distinguished dead and lead to securing funds promptly sufficient for portraits of all three.